MHC-4900/E80X

SERVICE MANUAL

AEP Model
UK Model
MHC-4900
E Model
Australian Model
MHC-E80X

- MHC-4900/E80X is composed of following models. As for the service manual, it is issued for each component model, then, please refer to it.

COMPONENT MODEL NAME FOR MHC-4900/E80X

	MHC-4900/E80X
AMPLIFIER	TA-H4900
CD PLAYER	HCD-H4900
GRAPHIC EQUALIZER	SEQ-H4900
CASSETTE DECK	TC-H4900
SPEAKER	SS-H4900

SPECIFICATIONS

General

Power requirements	240V AC, 50 Hz (UK model) 220 — 230V AC, 50/60 Hz (AEP, IT, G model) 110 — 120V or 220 — 240 V Adjustable AC, 50/60 Hz (E, EA, MY, MX, SP, AUS model)
Power consumption	200W

Supplied accessories

AM loop aerial (1)
Remote commander RM-S49 (1) (AEP, UK, IT, G model)
RM-S49E (1) (E, EA, MY, MX, SP, AUS model)
Sony SUM-3 (NS) batteries (2)
Speaker cords (2)
FM lead aerial (1)
Flat cord (1)
Mains lead (long) (1)
Mains lead (short) (1)

Designs and specifications are subject to change without notice.

- Abbreviations

G	German model
IT	Italian model
EA	Saudi Arabia model
MX	Mexican model
MY	Malaysia model
SP	Singapore model
AUS	Australian model

MINI HI-FI COMPONENT SYSTEM

SONY®

PARTS LIST

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS ******************************	
	1-467-634-11	REMOTE, COMMANDER (RM-S49)(4900)	
	1-467-635-11	REMOTE, COMMANDER (RM-S49E)(E80X)	
	1-501-369-11	ANTENNA (FM)(4900)	
	1-501-374-11	ANTENNA, LOOP	
	1-501-659-11	ANTENNA (FM)(E80X)	
⚠	1-556-280-00	CORD, POWER (2m)(E, MX)	
⚠	1-569-007-11	ADAPTER, CONVERSION 2P (E)	
⚠	1-569-008-11	ADAPTER, CONVERSION 2P (EA, MY, SP)	
⚠	1-575-131-11	CORD, POWER (2m)(AEP, IT, G, EA, MY, SP)	
⚠	1-590-866-21	CORD, POWER (2m)(UK)	
	1-696-741-11	CORD, (WITH CONNECTOR, 17P)	
⚠	1-751-015-11	CORD, POWER (2m)(AUS)	
⚠	1-751-207-11	CORD, POWER (CORD, SET)(50cm)(EXCEPT UK)	
	1-765-063-11	CORD, SPEAKER (2m)(E80X)	
⚠	1-765-425-11	CORD, POWER (50cm)(UK)	
	3-758-290-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE)(4900:AEP, G, UK)	
	3-758-290-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN, SWEDISH, DUTCH)(4900:AEP, IT)	
	3-758-290-61	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, CHINESE)(E80X)	
	4-956-911-11	LID, SLIDE (FOR RM-S49, RM-S49E)	
*	4-962-377-01	CUSHION (A)(FRONT)(TA)(E80X)	
*	4-962-378-01	CUSHION (A)(REAR)(TA)(E80X)	
*	4-965-118-01	CUSHION (SS)(four pieces in one package) (E80X)	
*	4-965-514-01	CUSHION (TQ)(FRONT)(TC, SEQ)(E80X)	
*	4-965-515-01	CUSHION (TQ)(REAR)(TC, SEQ)(E80X)	
*	4-965-517-01	INDIVIDUAL CARTON (HCD, TA, TC, SEQ, SS) (E, EA, MY, MX, SP)	
*	4-965-520-01	INDIVIDUAL CARTON (HCD, TA, TC, SEQ, SS)(AUS)	
*	4-965-530-01	CUSHION (H)(FRONT)(HCD)(E80X)	
*	4-965-531-01	CUSHION (H)(REAR)(HCD)(E80X)	
*	4-967-822-01	INDIVIDUAL CARTON (HCD, TA, TC, SEQ)(AEP, UK)	
*	4-967-823-01	CUSHION (UPPER)(HCD, TA, TC, SEQ)(AEP, UK)	
*	4-967-824-01	CUSHION (LOWER)(HCD, TA, TC, SEQ)(AEP, UK)	
*	4-967-825-01	INDIVIDUAL CARTON (TA, TC, SEQ)(AEP, IT, G)	
*	4-967-826-01	CUSHION (UPPER)(TA, TC, SEQ)(AEP, IT, G)	
*	4-967-827-01	CUSHION (LOWER)(TA, TC, SEQ)(AEP, IT, G)	

Sony Corporation
Consumer A&V Products Company
Home A&V Division

English
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TA-H4900

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

Photo : AEP model

TA-H4900 is the Integrated stereo amplifier section in MHC-4900/E80X

SPECIFICATIONS

Peak music power output (E, EA, MX, AUS, SP, MY model)	1000 watts, 6Ω
Continuous RMS power output	60 + 60 watts (6 ohms at 1 kHz, DIN) 70 + 70 watts (6 ohms at 1 kHz, 5% THD)
Music power output	140 + 140 watts (6 ohms at 1kHz, 10% THD)
Inputs	MIX MIC (minijack): sensitivity 1mV, impedance 600 ohms
Outputs	HEADPHONES (stereo minijack): accepts headphones of 8 ohms or more SURROUND SPEAKER (phono jack): accepts impedance of 8 to 16 ohms
Dimensions	Approx. 225 x 125 x 285 mm (w/h/d) (8 7/8 x 5 x 11 1/4 inches)
Mass	Approx. 4.3kg (9 lb 8 oz)

General

Destination	Power requirements	Power consumption
UK model	240 V AC, 50 Hz	160 W
AEP, G, IT model	220 — 230 V AC, 50/60Hz	160W
E, EA, MX, AUS, SP, MY model	110 - 120 V or 220 - 240 VAC Adjustable 50/60 Hz	160 W

Design and specifications subject to change without notice.

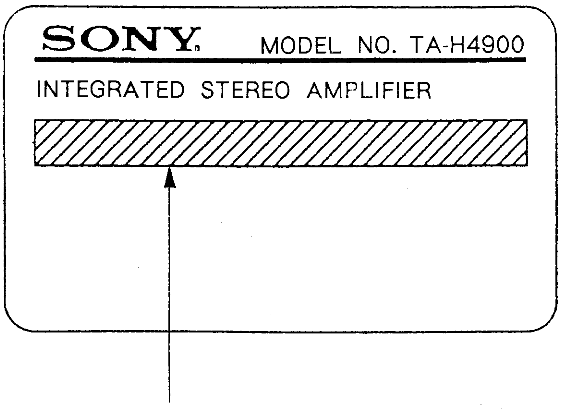
Note :
- G : German model.
  IT : Italian model.
  EA : Saudi Arabia model.
  MX : Mexican model.
  AUS : Australian model.
  SP : Singapore model.
  MY : Malaysia model.

INTEGRATED STEREO AMPLIFIER

SONY®

— MODEL IDENTIFICATION —

(Specification Label)



AEP model : AC : 220 – 230V ~ 50/60Hz 160W
G, IT model : AC : 220 – 230V ~ 50Hz 160W
UK model : AC : 240V ~ 50Hz
E, EA, MX, AUS, SP, MY model : AC : 110 – 120V/220 –240V ~ 50/60Hz 160W

Note :

- G : German model.
  IT : Italian model.
  EA : Saudi Arabia model.
  MX : Mexican model.
  AUS : Australian model.
  SP : Singapore model.
  MY : Malaysia model.

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SERVICE NOTE

- **Power Supply Used in Servicing**
  This unit have its own power supply as it works on the power supplied from the equalizer (SEQ-H4900) used for this series, connect this amplifier when servicing the unit (conduction repair, etc.).

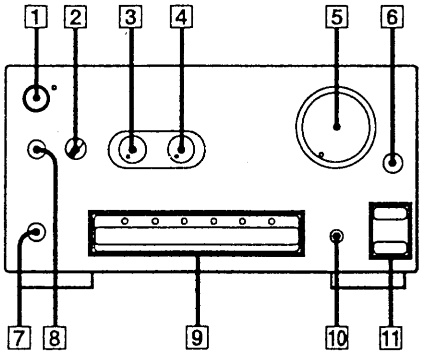
SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

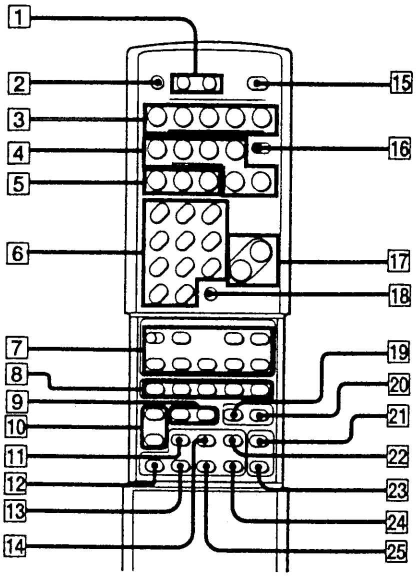
This section is extracted from instruction manual.

Front Panel



1 SYSTEM POWER switch and ON/STANDBY indicator (7)
The indicator remains lit as long as the AC power cord is connected to a wall outlet.
2 MIC LEVEL control (25)
3 DBS FREQUENCY control (20)
4 DBS LEVEL control (20)
5 VOLUME control* (5, 7, 20)
6 MUTING button* (20)
7 HEADPHONES jack (stereo minijack) (20, 26)
8 MIX MIC jack (minijack) (25, 26)
9 FUNCTION INDICATOR (16, 25, 26)
VIDEO (26)
TAPE (19)
MD/DAT (26)
CD (16, 25)
TUNER (24)
PHONO (26)
10 Remote sensor
11 FUNCTION >/< buttons (16, 25, 26)

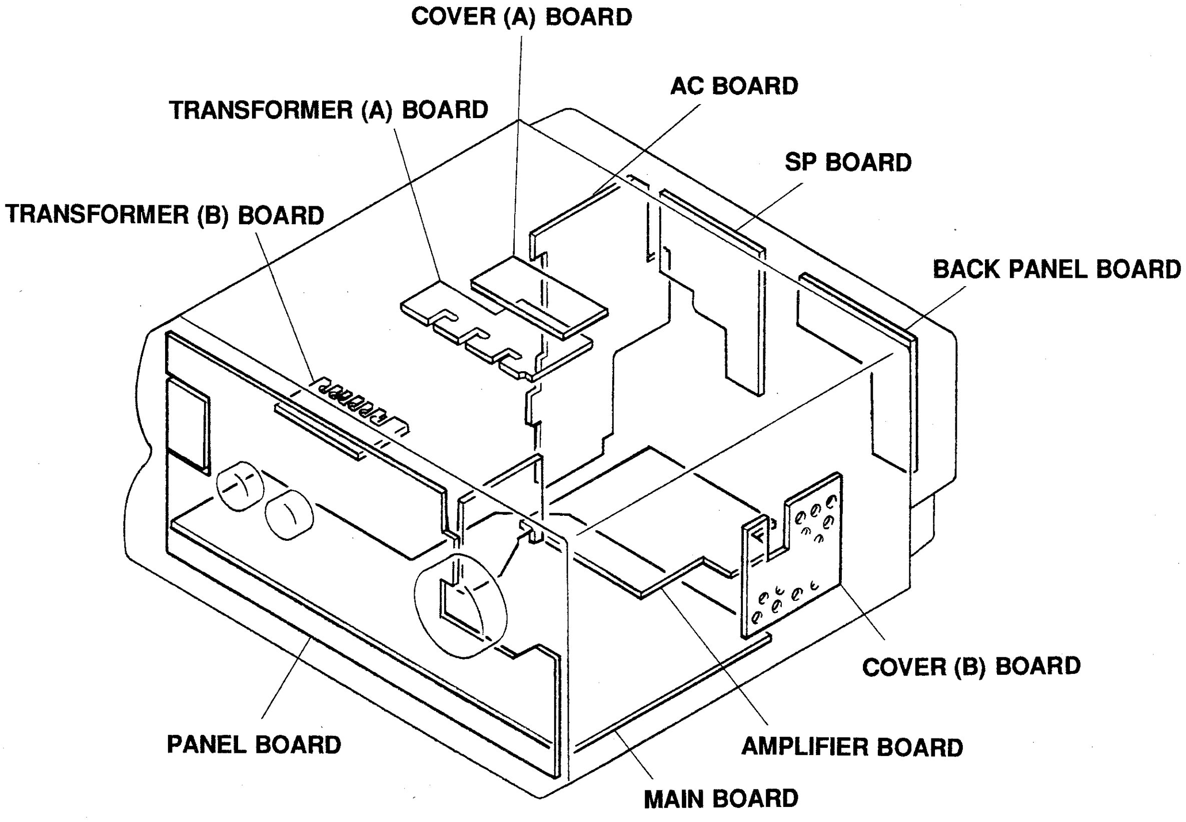
Remote commander (RM-S49/RM-S49E)



1 TAPE DECK A/B buttons (14)
2 SLEEP button (23)
3 CD/MD operating buttons (7)
4 Cassette deck operating buttons (14)
5 Tuner operating buttons (10)
6 CD/Tuner/numeric buttons (7, 11)
7 VCR operating buttons (26)
8 TV operating buttons (26)
9 MENU 1, 2 button (15, 20)
10 FUNCTION </> buttons (16, 25, 26)
11 CONTINUE button (8)
12 CHECK button (9)
13 CLEAR button (9)
14 SHUFFLE button (8)
15 SYSTEM POWER switch (7)
16 CD/MD switch (7)
17 VOLUME +/– buttons (7, 20)
18 MUTING button (20)
19 P.FILE button (22)
20 DIRECT button (15, 21)
21 RDS EON button (12)
(AEP, UK, G, IT model) (RM-S49)
21 REC button (12)
(E, EA, MX, AUS, SP, MY model) (RM-S49E)
22 PROGRAM button (8)
23 DISPLAY button (21)
(AEP, UK, G, IT model) (RM-S49)
23 REC MUTE button (21)
(E, EA, MX, AUS, SP, MY model) (RM-S49E)
24 TIME button (8)
25 REPEAT button (9)

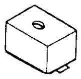
SECTION 2
DIAGRAMS

2-1. CIRCUIT BOARDS LOCATION

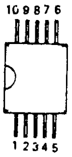

COVER (A) BOARD
AC BOARD
TRANSFORMER (A) BOARD
SP BOARD
TRANSFORMER (B) BOARD
BACK PANEL BOARD
COVER (B) BOARD
PANEL BOARD
AMPLIFIER BOARD
MAIN BOARD

2-2. SEMICONDUCTOR LEAD LAYOUTS

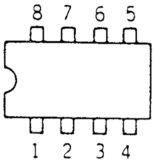
GP1U57XB



LB1638

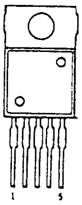

10 9 8 7 6
1 2 3 4 5

μPC393C

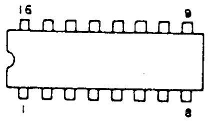


(Top view)

L78MR06

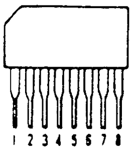


MC68HC05P9-SC405679B
SN74HC138AN

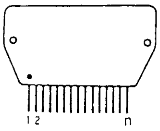


(TOP VIEW)

M5218AL
μPC1237HA

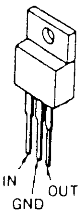


STK4172MK2K

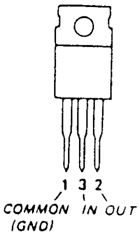


MARKING SIDE VIEW

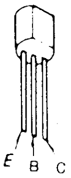
TA7812S



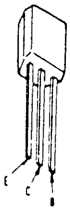
TA7912S


1 3 2
COMMON
(GND)
IN
OUT

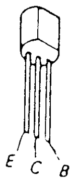
2SB1116



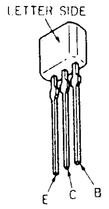
2SC2603-EF
2SC3622A-LK
DTA144WS
DTC124ES



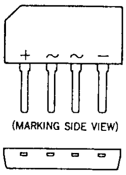
2SC1841-PAFAEA



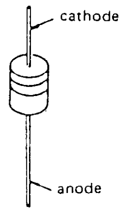
DTA124ES


LETTER SIDE
E
C
B

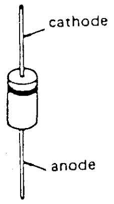
D5SBA20F01


+ ~ ~ −
(MARKING SIDE VIEW)

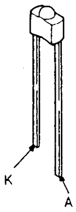
UZL-15M
11ES2


cathode
anode

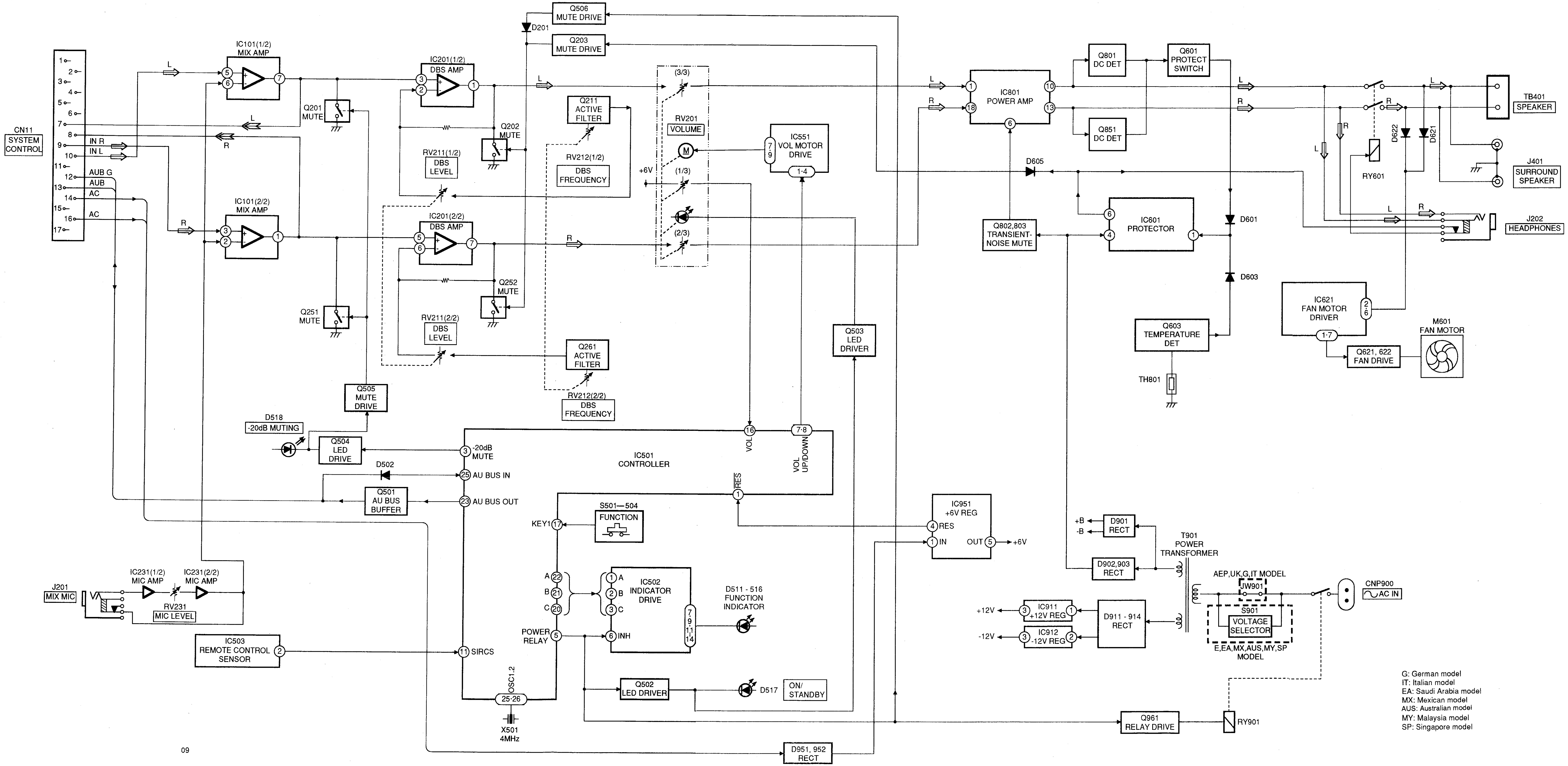
10E2
1N4148M


cathode
anode

SEL5220S



2-3. BLOCK DIAGRAM


CN11
SYSTEM CONTROL
IN R
IN L
AUB G
AUB
AC
AC
IC101(1/2)
MIX AMP
IC101(2/2)
MIX AMP
Q201
MUTE
Q251
MUTE
IC201(1/2)
DBS AMP
IC201(2/2)
DBS AMP
Q202
MUTE
Q252
MUTE
RV211(1/2)
DBS LEVEL
RV211(2/2)
DBS LEVEL
Q506
MUTE DRIVE
D201
Q203
MUTE DRIVE
Q211
ACTIVE FILTER
RV212(1/2)
DBS FREQUENCY
Q261
ACTIVE FILTER
RV212(2/2)
DBS FREQUENCY
(3/3)
RV201
VOLUME
+6V
(1/3)
(2/3)
IC551
VOL MOTOR DRIVE
Q503
LED DRIVER
Q505
MUTE DRIVE
D518
-20dB MUTING
Q504
LED DRIVE
D502
Q501
AU BUS BUFFER
IC501
CONTROLLER
-20dB MUTE
AU BUS IN
AU BUS OUT
VOL
VOL UP/DOWN
RES
KEY1
S501—504
FUNCTION
A
B
C
POWER RELAY
SIRCS
OSC1,2
X501
4MHz
IC502
INDICATOR DRIVE
INH
D511 - 516
FUNCTION INDICATOR
Q502
LED DRIVER
D517
ON/ STANDBY
IC503
REMOTE CONTROL SENSOR
J201
MIX MIC
IC231(1/2)
MIC AMP
IC231(2/2)
MIC AMP
RV231
MIC LEVEL
D951, 952
RECT
IC951
+6V REG
RES
IN
OUT
+6V
IC801
POWER AMP
Q801
DC DET
Q851
DC DET
Q601
PROTECT SWITCH
D605
Q802,803
TRANSIENT-NOISE MUTE
IC601
PROTECTOR
D601
D603
Q603
TEMPERATURE DET
TH801
IC621
FAN MOTOR DRIVER
Q621, 622
FAN DRIVE
M601
FAN MOTOR
TB401
SPEAKER
J401
SURROUND SPEAKER
RY601
D622
D621
J202
HEADPHONES
L
R
+B
-B
D901
RECT
D902,903
RECT
T901
POWER TRANSFORMER
AEP,UK,G,IT MODEL
JW901
S901
VOLTAGE SELECTOR
E,EA,MX,AUS,MY,SP MODEL
CNP900
AC IN
+12V
-12V
IC911
+12V REG
IC912
-12V REG
D911 - 914
RECT
Q961
RELAY DRIVE
RY901
09

G: German model
IT: Italian model
EA: Saudi Arabia model
MX: Mexican model
AUS: Australian model
MY: Malaysia model
SP: Singapore model

2-4. PRINTED WIRING BOARDS

- See page 4 for Circuit Boards Location.
- See page 5 for Semiconductor Lead Layouts.

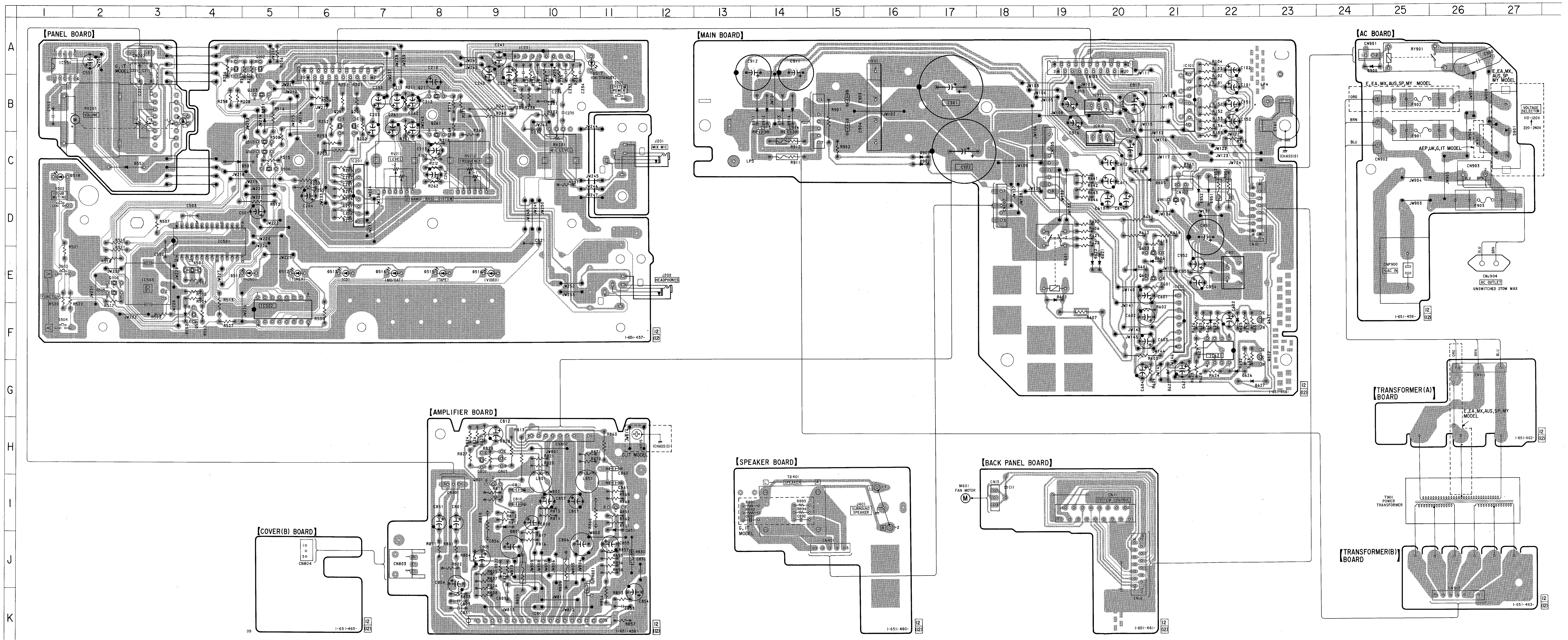
- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D201	B-5	IC503	E-3
D501	C-5	IC551	A-1
D502	F-4	IC601	E-21
D511	E-4	IC621	F-22
D512	E-5	IC801	K-10
D513	E-6	IC911	B-20
D514	E-7	IC912	B-20
D515	E-8	IC951	E-22
D516	E-9		
D517	A-10	Q201	B-7
D518	C-2	Q202	A-5
D551	C-3	Q203	B-5
D601	E-20	Q211	B-8
D602	E-19	Q251	B-6
D605	C-21	Q252	A-4
D606	E-21	Q261	B-8
D621	E-20	Q501	F-4
D622	E-20	Q502	C-5
D623	G-21	Q503	C-5
D624	F-22	Q504	E-2
D625	F-22	Q505	E-2
D626	G-22	Q506	C-5
D627	G-22	Q601	E-20
D801	J-9	Q603	E-20
D851	J-11	Q621	F-23
D900	A-24	Q622	F-23
D901	A-16	Q801	I-9
D902	C-17	Q802	H-9
D903	C-17	Q803	H-9
D911	B-14	Q851	I-11
D912	B-14	Q961	D-21
D913	B-14		
D914	B-14		
D951	D-22		
D952	D-21		
IC101	A-21		
IC201	C-7		
IC231	A-9		
IC501	D-4		
IC502	F-5		

Note:

- o—— : parts extracted from the component side.
- [ ]← indicates side identified with part number.
- ▨ : Pattern from the side which enable seeing.

- G : German model.
- IT : Italian model.
- EA : Saudi Arabia model.
- AUS : Australian model.
- SP : Singapore model.
- MY : Malaysia model.
- MX : Mexican model.


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
A B C D E F G H I J K
【PANEL BOARD】
VOLUME
MUTING
FUNCTION
(PHONO)
(TUNER)
(CD)
(MD/DAT)
(TAPE)
(VIDEO)
LEVEL
FREQUENCY
DYNAMIC BASS SYSTEM
MIC LEVEL
MIX MIC
HEADPHONES
ON/STANDBY
1-651-457-
【MAIN BOARD】
CHASSIS
1-651-456-
【AC BOARD】
CN901
RY901
C900
D900
E,EA,MX,AUS,SP,MY MODEL
E,EA,MX, AUS,SP, MY MODEL
ORG
BRN
BLU
F902
F901
F903
CN902
CN903
JW901
JW903
JW904
JW905
JW906
JW907
JW908
S901
VOLTAGE SELECTOR
110-120V
220-240V
AEP,UK,G,IT MODEL
CNP900
AC IN
CNJ904
AC OUTLET
UNSWITCHED 270W MAX
1-651-459-
【TRANSFORMER(A) BOARD】
E,EA,MX,AUS,SP,MY MODEL
1-651-462-
T901 POWER TRANSFORMER
【TRANSFORMER(B) BOARD】
1-651-463-
【AMPLIFIER BOARD】
CHASSIS
OUT MODEL
1-651-458-
【COVER(B) BOARD】
CN804
CN803
1-651-465-
【SPEAKER BOARD】
TB401 SPEAKER
J401 SURROUND SPEAKER
G, IT MODEL
1-651-460-
【BACK PANEL BOARD】
M601 FAN MOTOR
CN11
CN12
1-651-461-
12 (12)

2-5. SCHEMATIC DIAGRAM

- See page 18, 19 for IC Block Diagrams.
- See page 20 for IC Pin Functions. (IC501)

[PANEL BOARD]
IC551
MOTOR DRIVER
Q203
POWER OFF
MUTE
Q202,252
MUTING
Q211,261
SWITCH
IC201
DBS AMP
IC231
MIC AMP
MIC LEVEL
RV211
LEVEL
RV212
FREQUENCY
DYNAMIC BASS SYSTEM
Q201,251
MUTING
Q504,505
-20dB MUTE SWITCH
Q502,503
LED DRIVE
Q506
MUTE SWITCH
IC503
REMOTE SENSOR
Q501
AU BUS
BUFFER
IC501
CONTROLLER
IC502
LED DRIVER
[AMPLIFIER BOARD]
IC801
POWER AMP
Q802,803
TRANSIENT NOISE
MUTE
Q801,851
DC DET
G,IT MODEL
[COVER(B) BOARD]
[SPEAKER BOARD]
SURROUND SPEAKER
SPEAKER
[MAIN BOARD]
IC911
+12V REG
IC912
-12V REG
IC101
MIC MIX AMP
Q961
POWER RELAY DRIVER
Q601
PROTECT
SWITCH
PROTECTOR IC601
IC951
+6V REG
IC621
FAN MOTOR DRIVER
[BACK PANEL BOARD]
SYSTEM CONTROL
FAN MOTOR
[TRANSFORMER (B) BOARD]
[TRANSFORMER (A) BOARD]
POWER TRANSFORMER
[AC BOARD]
VOLTAGE SELECTOR
AC OUTLET
UNSWITCHED
270W MAX

Note:

- All capacitors are in μF unless otherwise noted. pF:μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : fusible resistor.
- ☐ : panel designation.

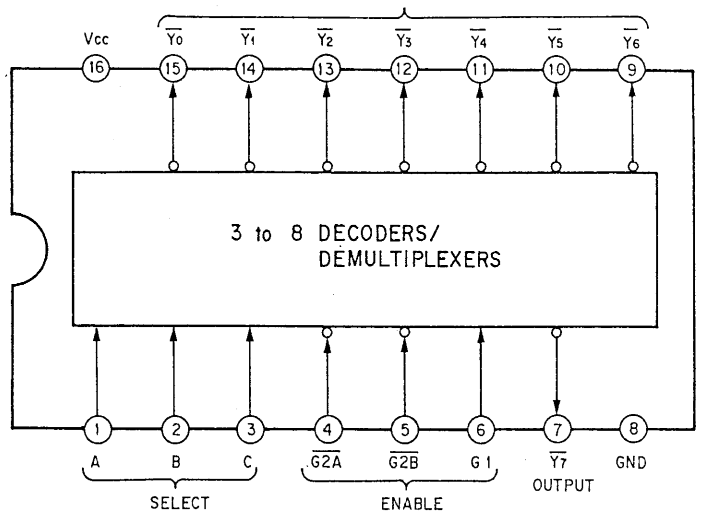
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▨ : B+ Line
- ▫▫▫▫▫ : B– Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  - ⇨ : PHONO
  - ▷ : MIC
  - ⪢ : REC

- G : German model.
- IT : Italian model.
- EA : Saudi Arabia model.
- AUS : Australian model.
- SP : Singapore model.
- MY : Malaysia model.
- MX : Mexican model.

2-6. IC BLOCK DIAGRAMS

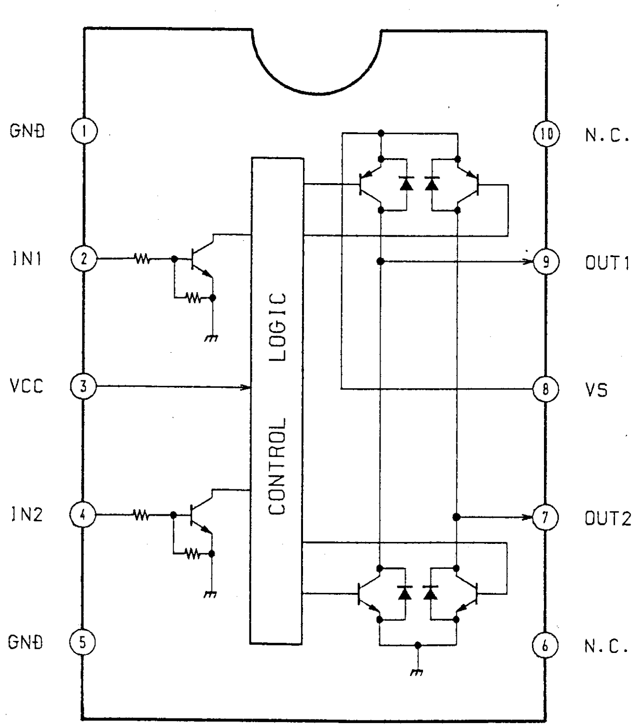
IC502 SN74HC138AN


OUTPUT
Vcc
$\overline{Y0}$
$\overline{Y1}$
$\overline{Y2}$
$\overline{Y3}$
$\overline{Y4}$
$\overline{Y5}$
$\overline{Y6}$
16
15
14
13
12
11
10
9
3 to 8 DECODERS/
DEMULTIPLEXERS
1
2
3
4
5
6
7
8
A
B
C
$\overline{G2A}$
$\overline{G2B}$
G1
$\overline{Y7}$
GND
OUTPUT
SELECT
ENABLE

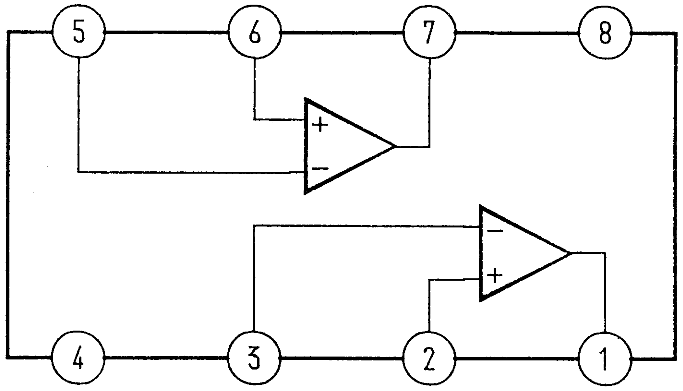
INPUTS					OUTPUTS							
ENABLE		SELECT										
G1	G2*	C	B	A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X	H	X	X	X	H	H	H	H	H	H	H	H
L	X	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	H	H	H	H	H	H	H
H	L	L	L	H	H	L	H	H	H	H	H	H
H	L	L	H	L	H	H	L	H	H	H	H	H
H	L	L	H	H	H	H	H	L	H	H	H	H
H	L	H	L	L	H	H	H	H	L	H	H	H
H	L	H	L	H	H	H	H	H	H	L	H	H
H	L	H	H	L	H	H	H	H	H	H	L	H
H	L	H	H	H	H	H	H	H	H	H	H	L

G2* = G2A + G2B

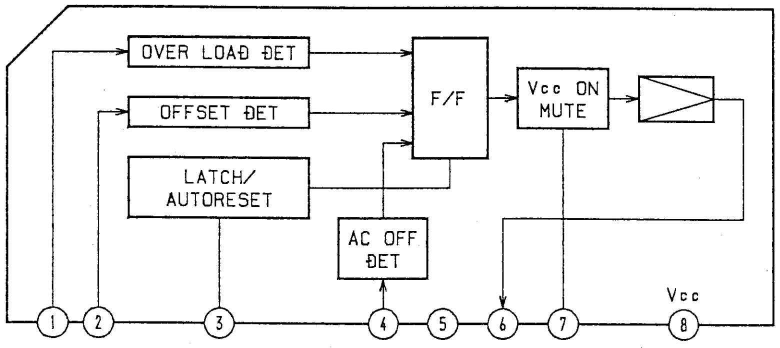
IC551 LB1638


GND
1
IN1
2
VCC
3
IN2
4
GND
5
N.C.
10
OUT1
9
VS
8
OUT2
7
N.C.
6
CONTROL LOGIC

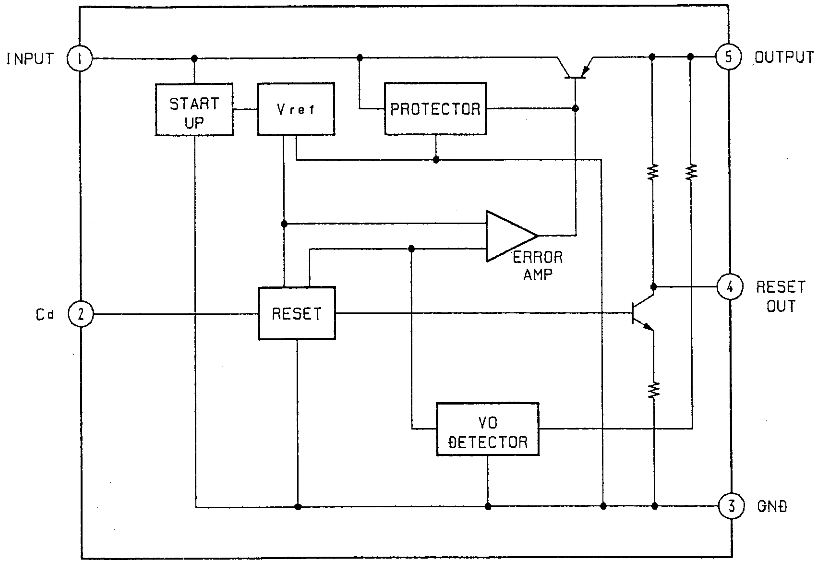
IC621 LM393P



IC601 μPC1237HA


OVER LOAD DET
OFFSET DET
LATCH/
AUTORESET
F/F
Vcc ON
MUTE
AC OFF
DET
Vcc
1
2
3
4
5
6
7
8

IC951 L78MR06


INPUT
1
START
UP
Vref
PROTECTOR
5
OUTPUT
ERROR
AMP
Cd
2
RESET
4
RESET
OUT
VO
DETECTOR
3
GND

2-7. IC PIN FUNCTIONS

• IC501 CONTROLLER (MC68HC05P9-SC405679B)

Pin No.	Pin Name	I/O	Function
1	$\overline{\text{RES}}$	I	Reset input. Normally "H"
2	$\overline{\text{IRQ}}$	I	Connected to $\overline{\text{RES}}$
3	–20dB MUTE	O	Muting control. "H": Mute
4	PROLOGIC	O	Not used
5	POWER RELAY	O	Power relay control "H": ON
6	V3	O	Not used
7	VOL UP	O	Volume UP control output
8	VOL DOWN	O	Volume DOWN control output
9	V2	O	Not used
10	V1	O	
11	SIRCS	I	SIRCS data input
12	——	–	Not used
13	——	–	
14	VSS	–	GND
15	VREF	I	Reference voltage input +5V
16	VOL	I	Volume position detection input
17	KEY1	I	Key input
18	KEY2	I	Connected to +5V
19	MODE	I	Connected to GND
20	C	O	Function control output *1
21	B	O	
22	A	O	
23	AU BUS OUT	O	Audio bus output
24	——	–	Not used
25	AU BUS IN	I	Audio bus input
26	OSC2	I	System clock (4 MHz)
27	OSC1	O	
28	VDD	–	+5V

*1

FUNCTION	FUNCTION CONTROL		
	A	B	C
PHONO	H	H	H
TUNER	H	L	L
CD	L	H	L
TAPE	L	L	H
MD/DAT	H	H	L
VIDEO	L	H	H

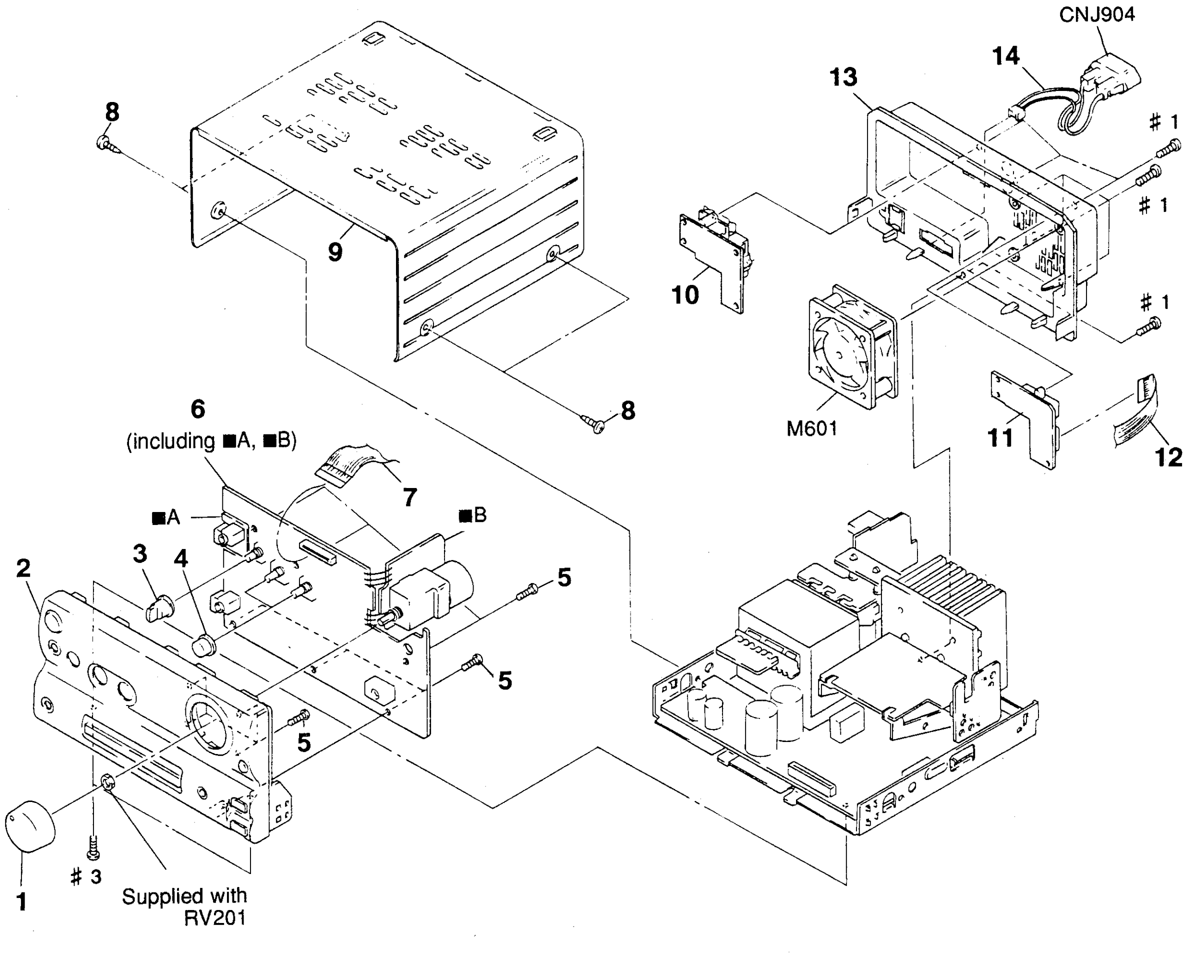
Note: All output ports should be set to "L" at power off.
After power on, all output ports should be set to "L" until the AU BUS inputs a signal.

SECTION 3
EXPLODED VIEWS

NOTE:
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- G ; German model
- IT ; Italian model
- EA ; Saudi Arabia model
- MX : Mexican model
- AUS ; Australian model
- SP ; Singapore model
- MY ; Malaysia model

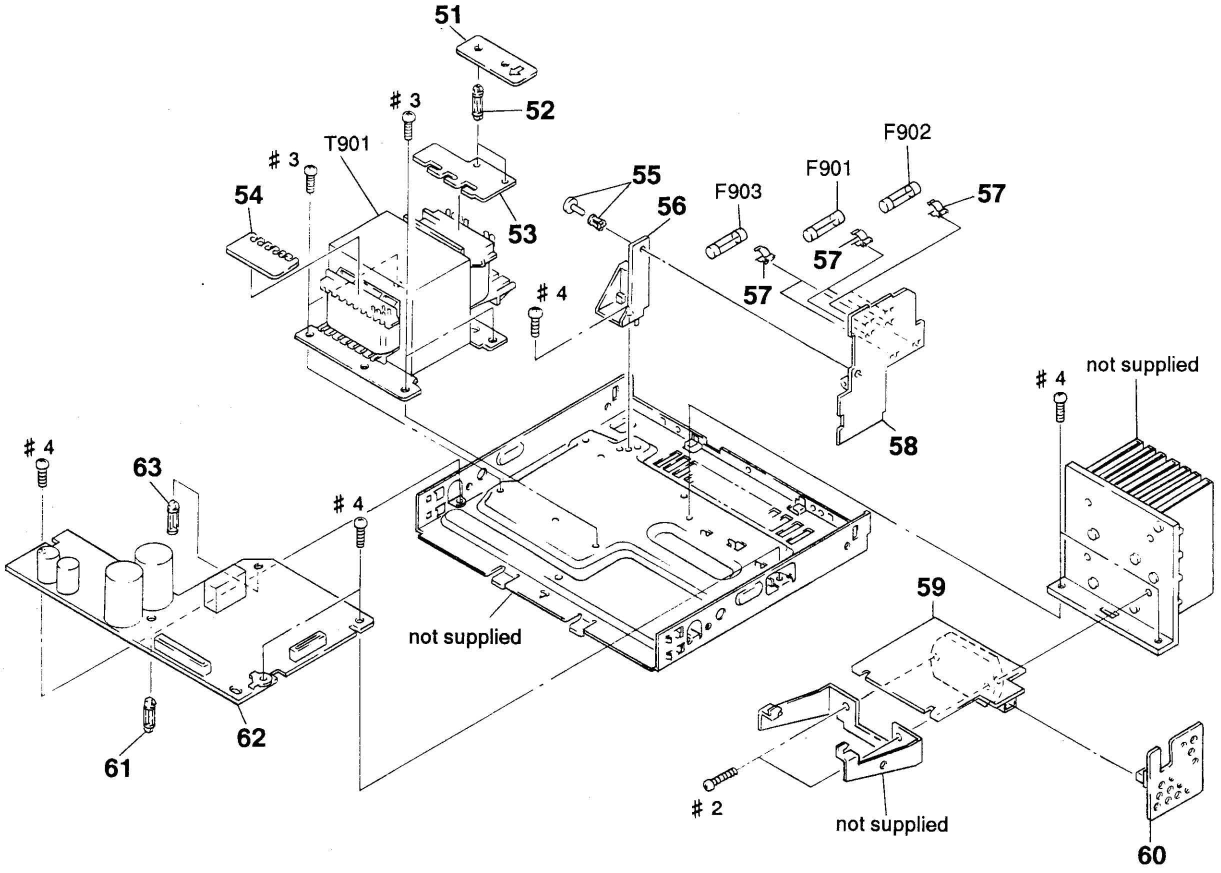
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

3-1. FRONT PANEL AND REAR PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4944-094-1	KNOB (VOLUME) ASSY	
2	X-4944-647-1	PANEL ASSY, FRONT (AEP, UK, G, IT)	
2	X-4944-648-1	PANEL ASSY, FRONT (E, AUS, EA, MY, SP, MX)	
3	4-961-911-11	KNOB (MICROPHONE)	
4	4-961-912-01	KNOB (DBFB)	
5	4-951-620-01	SCREW (2.6X8), +BVTP	
* 6	A-4369-243-A	PANEL BOARD, COMPLETE (AEP)	
* 6	A-4369-244-A	PANEL BOARD, COMPLETE (UK)	
* 6	A-4369-245-A	PANEL BOARD, COMPLETE (G, IT)	
* 6	A-4369-249-A	PANEL BOARD, COMPLETE (E, AUS, EA, MY, SP, MX)	
7	1-765-194-11	WIRE (FLAT TYPE) (21 CORE)	
8	3-363-099-21	SCREW (CASE 3 TP2)	
9	4-961-519-21	CASE	
* 10	1-651-460-11	SPEAKER BOARD	
* 11	1-651-461-11	BACK PANEL BOARD	
12	1-765-192-11	WIRE (FLAT TYPE) (15 CORE)	
* 13	4-954-256-81	PANEL, BACK (AEP, UK, G, IT)	
* 13	4-954-256-91	PANEL, BACK (E, AUS, EA, MY, SP, MX)	
14	1-751-216-31	LEAD (WITH CONNECTOR) (2 CORE)	
⚠CNJ904	1-526-794-11	OUTLET, AC	
M601	1-541-953-11	MOTOR, DC FAN	

3-2. CHASSIS SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	1-651-464-11	COVER (A) BOARD	
* 52	4-385-948-01	HOLDER, PCB	
* 53	1-651-462-11	TRANSFORMER (A) BOARD	
* 54	1-651-463-11	TRANSFORMER (B) BOARD	
55	4-812-134-11	RIVET NYLON, 3.5	
* 56	4-954-242-01	BRACKET (IN)	
57	1-533-293-11	FUSE HOLDER	
* 58	1-651-459-11	AC BOARD	
* 59	A-4369-250-A	AMPLIFIER BOARD, COMPLETE (AEP)	
* 59	A-4369-251-A	AMPLIFIER BOARD, COMPLETE (UK)	
* 59	A-4369-252-A	AMPLIFIER BOARD, COMPLETE (G, IT)	
* 59	A-4369-253-A	AMPLIFIER BOARD, COMPLETE (E, AUS, EA, MY, SP, MX)	
* 60	1-651-465-11	COVER (B) BOARD	
* 61	3-682-419-71	HOLDER, PCB	
* 62	A-4369-239-A	MAIN BOARD, COMPLETE (AEP)	
* 62	A-4369-240-A	MAIN BOARD, COMPLETE (UK)	
* 62	A-4369-241-A	MAIN BOARD, COMPLETE (G, IT)	
* 62	A-4369-242-A	MAIN BOARD, COMPLETE (E, AUS, EA, MY, SP, MX)	
* 63	3-669-610-00	SPACER	
⚠F901	1-532-259-00	FUSE (T1.6A) (AEP, UK, G, IT)	
⚠F901	1-532-285-00	FUSE (T1.25A) (E, AUS, EA, MY, SP, MX)	
⚠F902	1-532-286-00	FUSE (T2.5A) (E, AUS, EA, MY, SP, MX)	
⚠F903	1-532-286-00	FUSE (T2.5A)	
⚠T901	1-426-683-11	TRANSFORMER, POWER (AEP, G, IT)	
⚠T901	1-426-684-11	TRANSFORMER, POWER (UK)	
⚠T901	1-426-685-11	TRANSFORMER, POWER (E, AUS, EA, MY, SP, MX)	

SECTION 4
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.
- G ; German model
- IT ; Italian model
- EA ; Saudi Arabia model
- MX ; Mexican model
- AUS ; Australian model
- SP ; Singapore model
- MY ; Malaysia model

Ref. No.	Part No.	Description	Remark
*	1-651-459-11	AC BOARD ********	
	1-533-293-11	FUSE HOLDER	
		< CAPACITOR >	
⚠C900	1-161-744-51	CERAMIC 0.01uF	400V
		< CONNECTOR >	
CN901	1-564-517-11	PLUG, CONNECTOR 2P	
CN902	1-751-206-31	LEAD (WITH CONNECTOR) (2 CORE)	(AEP, UK, G, IT)
CN902	1-765-186-21	LEAD (WITH CONNECTOR) (3 CORE)	(E, EA, MX, AUS, SP, MY)
CN903	1-564-321-00	PIN, CONNECTOR 2P	
⚠CNP900	1-526-930-11	INLET, AC (~ AC IN) (E, EA, MX)	
⚠CNP900	1-526-931-11	INLET, AC (~ AC IN)	(AEP, UK, G, IT, AUS, MY, SP)
		< DIODE >	
D900	8-719-987-63	DIODE 1N4148M	
		< FUSE >	
⚠F901	1-532-259-00	FUSE (T1.6A) (AEP, UK, G, IT)	
⚠F901	1-532-285-00	FUSE (T1.25A) (E, EA, MX, AUS, SP, MY)	
⚠F902	1-532-286-00	FUSE (T2.5A) (E, EA, MX, AUS, SP, MY)	
⚠F903	1-532-286-00	FUSE (T2.5A)	
		< RELAY >	
⚠RY901	1-515-738-11	RELAY, POWER	
		< SWITCH >	
⚠S901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE	(E, EA, MX, AUS, SP, MY)

****

Ref. No.	Part No.	Description	Remark
*	A-4369-250-A	AMPLIFIER BOARD, COMPLETE (AEP) *******************************	
*	A-4369-251-A	AMPLIFIER BOARD, COMPLETE (UK) ******************************	
*	A-4369-252-A	AMPLIFIER BOARD, COMPLETE (G, IT) ********************************	
*	A-4369-253-A	AMPLIFIER BOARD, COMPLETE *************************	(E, EA, MX, AUS, SP, MY)
		< CAPACITOR >	
C801	1-124-257-00	ELECT 2.2uF 20% 50V	
C803	1-162-282-31	CERAMIC 100PF 10% 50V	
C804	1-124-910-11	ELECT 47uF 20% 50V	
C805	1-124-910-11	ELECT 47uF 20% 50V	
C806	1-124-122-11	ELECT 100uF 20% 50V	
C807	1-124-916-11	ELECT 22uF 20% 63V	
C808	1-124-916-11	ELECT 22uF 20% 63V	
C809	1-164-159-11	CERAMIC 0.1uF 50V	
C810	1-136-163-00	FILM 0.068uF 5% 50V	
C811	1-136-163-00	FILM 0.068uF 5% 50V	
C812	1-124-910-11	ELECT 47uF 20% 50V	
C831	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C832	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C851	1-124-257-00	ELECT 2.2uF 20% 50V	
C853	1-162-282-31	CERAMIC 100PF 10% 50V	
C854	1-124-910-11	ELECT 47uF 20% 50V	
C855	1-124-910-11	ELECT 47uF 20% 50V	
C856	1-124-122-11	ELECT 100uF 20% 50V	
C857	1-124-916-11	ELECT 22uF 20% 63V	
C860	1-136-163-00	FILM 0.068uF 5% 50V	
C861	1-136-163-00	FILM 0.068uF 5% 50V	
		< CONNECTOR >	
* CN803	1-569-499-11	PIN, CONNECTOR 3P	
		< DIODE >	
D801	8-719-987-63	DIODE 1N4148M	
D851	8-719-987-63	DIODE 1N4148M	

AMPLIFIER | BACK PANEL | COVER (A) | COVER (B)

Ref. No.	Part No.	Description				Remark
		< IC >				
IC801	8-749-920-10	IC STK4172MK2				
		< COIL >				
L801	1-420-872-00	COIL, AIR CORE				
L851	1-420-872-00	COIL, AIR CORE				
		< TRANSISTOR >				
Q801	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA				
Q802	8-729-900-36	TRANSISTOR DTC124ES				
Q803	8-729-620-05	TRANSISTOR 2SC2603-EF				
Q851	8-729-140-84	TRANSISTOR 2SC1841-PAFAEA				
		< RESISTOR >				
R801	1-249-417-11	CARBON	1K	5%	1/4W	F
R802	1-249-438-11	CARBON	56K	5%	1/4W	
R803	1-249-414-11	CARBON	560	5%	1/4W	F
R804	1-249-438-11	CARBON	56K	5%	1/4W	
R805	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R806	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R807	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R808	1-249-425-11	CARBON	4.7K	5%	1/4W	F
⚠R809	1-212-881-11	FUSIBLE	100	5%	1/4W	F
⚠R810	1-217-151-00	RES, METAL PLATE	0.22		2W	
R811	1-249-417-11	CARBON	1K	5%	1/4W	F
R812	1-249-431-11	CARBON	15K	5%	1/4W	
R813	1-249-441-11	CARBON	100K	5%	1/4W	
R814	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R815	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R816	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R817	1-249-421-11	CARBON	2.2K	5%	1/4W	F
R818	1-249-397-11	CARBON	22	5%	1/4W	F
R819	1-249-397-11	CARBON	22	5%	1/4W	F
R820	1-249-397-11	CARBON	22	5%	1/4W	F
R821	1-249-397-11	CARBON	22	5%	1/4W	F
R822	1-249-429-11	CARBON	10K	5%	1/4W	
R823	1-247-881-00	CARBON	120K	5%	1/4W	
R824	1-249-437-11	CARBON	47K	5%	1/4W	
R825	1-249-417-11	CARBON	1K	5%	1/4W	F
R826	1-249-439-11	CARBON	68K	5%	1/4W	
R827	1-249-437-11	CARBON	47K	5%	1/4W	
R828	1-249-426-11	CARBON	5.6K	5%	1/4W	
R829	1-249-433-11	CARBON	22K	5%	1/4W	
⚠R830	1-212-934-00	RES, FUSE	1	5%	1/2W	F
R851	1-249-417-11	CARBON	1K	5%	1/4W	F
R852	1-249-438-11	CARBON	56K	5%	1/4W	
R853	1-249-414-11	CARBON	560	5%	1/4W	F
R854	1-249-438-11	CARBON	56K	5%	1/4W	
R855	1-249-425-11	CARBON	4.7K	5%	1/4W	F

Ref. No.	Part No.	Description				Remark
R856	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R857	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R858	1-249-425-11	CARBON	4.7K	5%	1/4W	F
⚠R859	1-212-881-11	FUSIBLE	100	5%	1/4W	F
⚠R860	1-217-151-00	RES, METAL PLATE	0.22		2W	
R861	1-249-417-11	CARBON	1K	5%	1/4W	F
R862	1-249-431-11	CARBON	15K	5%	1/4W	
R863	1-249-441-11	CARBON	100K	5%	1/4W	
R868	1-249-397-11	CARBON	22	5%	1/4W	F
R869	1-249-397-11	CARBON	22	5%	1/4W	F
R870	1-249-397-11	CARBON	22	5%	1/4W	F
R871	1-249-397-11	CARBON	22	5%	1/4W	F

****

* 1-651-461-11 BACK PANEL BOARD

****

		< CAPACITOR >				
C11	1-164-159-11	CERAMIC	0.1uF		50V	
		< CONNECTOR >				
* CN11	1-580-740-11	SOCKET, CONNECTOR 17P (SYSTEM CONTROL)				
* CN12	1-568-834-11	SOCKET, CONNECTOR 15P				
* CN13	1-564-518-11	PLUG, CONNECTOR 3P				

****

* 1-651-464-11 COVER (A) BOARD

****

****

* 1-651-465-11 COVER (B) BOARD

****

		< CONNECTOR >				
CN804	1-569-490-11	SOCKET, CONNECTOR 3P				

****

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
*	A-4369-239-A	MAIN BOARD, COMPLETE (AEP)	
		**************************	
*	A-4369-240-A	MAIN BOARD, COMPLETE (UK)	
		*************************	
*	A-4369-241-A	MAIN BOARD, COMPLETE (G, IT)	
		***************************	
*	A-4369-242-A	MAIN BOARD, COMPLETE (E, EA, MX, AUS, SP, MY)	
		**	

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C101	1-124-907-11	ELECT 10uF 20% 50V	
C102	1-124-907-11	ELECT 10uF 20% 50V	
C151	1-124-907-11	ELECT 10uF 20% 50V	
C152	1-124-907-11	ELECT 10uF 20% 50V	
C601	1-126-176-11	ELECT 220uF 20% 10V	
C602	1-126-176-11	ELECT 220uF 20% 10V	
C603	1-124-925-11	ELECT 2.2uF 20% 100V	
C604	1-124-443-00	ELECT 100uF 20% 10V	
C611	1-124-916-11	ELECT 22uF 20% 63V	
C612	1-124-916-11	ELECT 22uF 20% 63V	
C613	1-124-916-11	ELECT 22uF 20% 63V	
C614	1-124-916-11	ELECT 22uF 20% 63V	
C621	1-124-907-11	ELECT 10uF 20% 50V	
C622	1-124-907-11	ELECT 10uF 20% 50V	
C901	1-126-138-11	ELECT 4700uF 20% 50V	
C902	1-126-138-11	ELECT 4700uF 20% 50V	
C903	1-136-165-00	FILM 0.1uF 5% 50V	
C904	1-136-165-00	FILM 0.1uF 5% 50V	
C911	1-124-557-11	ELECT 1000uF 20% 25V	
C912	1-124-557-11	ELECT 1000uF 20% 25V	
C913	1-136-153-00	FILM 0.01uF 5% 50V	
C914	1-136-153-00	FILM 0.01uF 5% 50V	
C915	1-124-907-11	ELECT 10uF 20% 50V	
C916	1-124-907-11	ELECT 10uF 20% 50V	
C917	1-126-935-11	ELECT 470uF 20% 16V	
C918	1-126-935-11	ELECT 470uF 20% 16V	
C951	1-126-768-11	ELECT 2200uF 20% 16V	
C952	1-124-463-00	ELECT 0.1uF 20% 50V	
C953	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C954	1-124-443-00	ELECT 100uF 20% 10V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN101	1-568-834-11	SOCKET, CONNECTOR 15P	
CN102	1-564-505-11	PLUG, CONNECTOR 2P	
CN103	1-568-838-11	SOCKET, CONNECTOR 21P	
CN105	1-691-770-11	PLUG (MICRO CONNECTOR) 8P	
CN107	1-691-766-11	PLUG (MICRO CONNECTOR) 4P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D601	8-719-987-63	DIODE 1N4148M	
D602	8-719-987-63	DIODE 1N4148M	
D605	8-719-987-63	DIODE 1N4148M	
D606	8-719-987-63	DIODE 1N4148M	
D621	8-719-987-63	DIODE 1N4148M	
D622	8-719-987-63	DIODE 1N4148M	
D623	8-719-001-91	DIODE UZL-15M	
D624	8-719-987-63	DIODE 1N4148M	
D625	8-719-987-63	DIODE 1N4148M	
D626	8-719-987-63	DIODE 1N4148M	
D627	8-719-200-82	DIODE 11ES2	
D901	8-719-510-68	DIODE D5SBA20F01	
D902	8-719-987-63	DIODE 1N4148M	
D903	8-719-987-63	DIODE 1N4148M	
D911	8-719-200-02	DIODE 10E2	
D912	8-719-200-02	DIODE 10E2	
D913	8-719-200-02	DIODE 10E2	
D914	8-719-200-02	DIODE 10E2	
D951	8-719-200-02	DIODE 10E2	
D952	8-719-200-02	DIODE 10E2	

< GROUND PLATE >

Ref. No.	Part No.	Description	Remark
* E101	4-942-204-01	PLATE, GROUND	

< IC >

Ref. No.	Part No.	Description	Remark
IC101	8-759-634-50	IC M5218AL	
IC601	8-759-111-68	IC UPC1237HA	
IC621	8-759-103-93	IC UPC393C	
IC911	8-759-094-64	IC TA7812S	
IC912	8-759-094-59	IC TA7912S	
IC951	8-759-820-13	IC L78MR06	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q601	8-729-900-63	TRANSISTOR DTA124ES	
Q603	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q621	8-729-118-01	TRANSISTOR 2SB1116	
Q622	8-729-118-01	TRANSISTOR 2SB1116	
Q961	8-729-620-05	TRANSISTOR 2SC2603-EF	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R101	1-249-429-11	CARBON 10K 5% 1/4W	
R102	1-249-429-11	CARBON 10K 5% 1/4W	
R103	1-249-429-11	CARBON 10K 5% 1/4W	
R104	1-249-429-11	CARBON 10K 5% 1/4W	
R105	1-247-807-31	CARBON 100 5% 1/4W	
R151	1-249-429-11	CARBON 10K 5% 1/4W	
R152	1-249-429-11	CARBON 10K 5% 1/4W	
R153	1-249-429-11	CARBON 10K 5% 1/4W	
R154	1-249-429-11	CARBON 10K 5% 1/4W	

MAIN | PANEL

Ref.No.	Part No.	Description				Remark
R155	1-247-807-31	CARBON	100	5%	1/4W	
R601	1-249-429-11	CARBON	10K	5%	1/4W	
R602	1-249-441-11	CARBON	100K	5%	1/4W	
R603	1-249-430-11	CARBON	12K	5%	1/4W	
R604	1-249-437-11	CARBON	47K	5%	1/4W	
R605	1-249-438-11	CARBON	56K	5%	1/4W	
R606	1-249-437-11	CARBON	47K	5%	1/4W	
⚠R607	1-215-891-11	METAL OXIDE	680	5%	2W	F
R611	1-249-429-11	CARBON	10K	5%	1/4W	
R612	1-249-429-11	CARBON	10K	5%	1/4W	
R613	1-249-429-11	CARBON	10K	5%	1/4W	
R614	1-249-429-11	CARBON	10K	5%	1/4W	
R621	1-249-435-11	CARBON	33K	5%	1/4W	
R622	1-249-435-11	CARBON	33K	5%	1/4W	
R623	1-249-441-11	CARBON	100K	5%	1/4W	
R624	1-249-441-11	CARBON	100K	5%	1/4W	
R625	1-249-437-11	CARBON	47K	5%	1/4W	
R626	1-249-429-11	CARBON	10K	5%	1/4W	
R627	1-249-417-11	CARBON	1K	5%	1/4W	F
R628	1-247-807-31	CARBON	100	5%	1/4W	
R629	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R630	1-249-425-11	CARBON	4.7K	5%	1/4W	F
R631	1-249-441-11	CARBON	100K	5%	1/4W	
R632	1-249-429-11	CARBON	10K	5%	1/4W	
R633	1-249-441-11	CARBON	100K	5%	1/4W	
R641	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R642	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R643	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R644	1-249-418-11	CARBON	1.2K	5%	1/4W	F
R901	1-249-429-11	CARBON	10K	5%	1/4W	
R902	1-249-429-11	CARBON	10K	5%	1/4W	
⚠R911	1-219-134-11	FUSIBLE	0.1	10%	1/4W	
⚠R912	1-219-134-11	FUSIBLE	0.1	10%	1/4W	
⚠R951	1-212-934-00	FUSIBLE	1	5%	1/2W	F
⚠R952	1-212-934-00	FUSIBLE	1	5%	1/2W	F
R961	1-249-417-11	CARBON	1K	5%	1/4W	F
		< RELAY >				
RY601	1-515-920-11	RELAY (24V)				
		< THERMISTOR >				
TH801	1-807-796-11	THERMISTOR				

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Ref.No.	Part No.	Description				Remark
*	A-4369-243-A	PANEL BOARD, COMPLETE (AEP)				
		***************************				
*	A-4369-244-A	PANEL BOARD, COMPLETE (UK)				
		**************************				
*	A-4369-245-A	PANEL BOARD, COMPLETE (G, IT)				
		****************************				
*	A-4369-249-A	PANEL BOARD, COMPLETE(E, EA, MX, AUS, SP, MY)				
		***				
		< CAPACITOR >				
C201	1-162-282-31	CERAMIC	100PF	10%	50V	
C202	1-162-282-31	CERAMIC	100PF	10%	50V	
C203	1-126-301-11	ELECT	1uF	20%	50V	
C204	1-126-096-11	ELECT	10uF	20%	35V	
C210	1-124-443-00	ELECT	100uF	20%	10V	
C211	1-124-465-00	ELECT	0.47uF	20%	50V	
C212	1-124-464-11	ELECT	0.22uF	20%	50V	
C213	1-126-157-11	ELECT	10uF	20%	16V	
C221	1-162-282-31	CERAMIC	100PF	10%	50V	(G, IT)
C231	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C232	1-164-159-11	CERAMIC	0.1uF		50V	
C233	1-162-282-31	CERAMIC	100PF	10%	50V	
C234	1-162-286-31	CERAMIC	220PF	10%	50V	
C235	1-164-159-11	CERAMIC	0.1uF		50V	
C236	1-164-159-11	CERAMIC	0.1uF		50V	
C237	1-162-282-31	CERAMIC	100PF	10%	50V	
C238	1-162-286-31	CERAMIC	220PF	10%	50V	
C239	1-124-464-11	ELECT	0.22uF	20%	50V	
C240	1-126-157-11	ELECT	10uF	20%	16V	
C241	1-126-157-11	ELECT	10uF	20%	16V	
C251	1-162-282-31	CERAMIC	100PF	10%	50V	
C252	1-162-282-31	CERAMIC	100PF	10%	50V	
C253	1-126-301-11	ELECT	1uF	20%	50V	
C261	1-124-465-00	ELECT	0.47uF	20%	50V	
C262	1-124-464-11	ELECT	0.22uF	20%	50V	
C263	1-126-157-11	ELECT	10uF	20%	16V	
C271	1-162-282-31	CERAMIC	100PF	10%	50V	(G, IT)
C501	1-126-157-11	ELECT	10uF	20%	16V	
C502	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C503	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C521	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C551	1-124-443-00	ELECT	100uF	20%	10V	
C552	1-161-379-00	CERAMIC	0.01uF	20%	25V	
		< CONNECTOR >				
CN201	1-568-838-11	SOCKET, CONNECTOR 21P				
* CN202	1-564-337-00	PIN, CONNECTOR 3P				

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D201	8-719-987-63	DIODE 1N4148M	
D501	8-719-200-82	DIODE 11ES2	
D502	8-719-987-63	DIODE 1N4148M	
D511	8-719-032-83	DIODE SEL5220S (PHONO)	
D512	8-719-032-83	DIODE SEL5220S (TUNER)	
D513	8-719-032-83	DIODE SEL5220S (CD)	
D514	8-719-032-83	DIODE SEL5220S (MD/DAT)	
D515	8-719-032-83	DIODE SEL5220S (TAPE)	
D516	8-719-032-83	DIODE SEL5220S (VIDEO)	
D517	8-719-032-83	DIODE SEL5220S (ON/STANDBY)	
D518	8-719-032-83	DIODE SEL5220S (-20dB MUTING)	
D551	8-719-200-82	DIODE 11ES2	
		< IC >	
IC201	8-759-634-50	IC M5218AL	
IC231	8-759-634-50	IC M5218AL	
IC501	8-759-192-72	IC MC68HC05P9-SC405679B	
IC502	8-759-917-43	IC SN74HC138AN	
IC503	8-749-923-43	IC GP1U57XB	
IC551	8-759-184-40	IC LB1638	
		< JACK >	
J201	1-764-106-11	JACK (MIX MIC)	
J202	1-764-106-11	JACK (HEADPHONES)	
		< TRANSISTOR >	
Q201	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q202	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q203	8-729-900-69	TRANSISTOR DTA144WS	
Q211	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q251	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q252	8-729-141-30	TRANSISTOR 2SC3623A-LK	
Q261	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q501	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q502	8-729-900-63	TRANSISTOR DTA124ES	
Q503	8-729-900-36	TRANSISTOR DTC124ES	
Q504	8-729-900-36	TRANSISTOR DTC124ES	
Q505	8-729-900-63	TRANSISTOR DTA124ES	
Q506	8-729-900-63	TRANSISTOR DTA124ES	
		< RESISTOR >	
R201	1-249-429-11	CARBON 10K 5% 1/4W	
R202	1-249-417-11	CARBON 1K 5% 1/4W	F
R203	1-249-429-11	CARBON 10K 5% 1/4W	
R204	1-249-441-11	CARBON 100K 5% 1/4W	
R205	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R206	1-249-417-11	CARBON 1K 5% 1/4W	F
R207	1-249-429-11	CARBON 10K 5% 1/4W	
R208	1-249-429-11	CARBON 10K 5% 1/4W	
R209	1-247-807-31	CARBON 100 5% 1/4W	
R211	1-249-418-11	CARBON 1.2K 5% 1/4W	F
R212	1-249-435-11	CARBON 33K 5% 1/4W	
R213	1-247-895-00	CARBON 470K 5% 1/4W	
R214	1-249-429-11	CARBON 10K 5% 1/4W	
R215	1-249-417-11	CARBON 1K 5% 1/4W	F
R231	1-249-441-11	CARBON 100K 5% 1/4W	
R232	1-249-417-11	CARBON 1K 5% 1/4W	F
R233	1-249-431-11	CARBON 15K 5% 1/4W	
R234	1-249-441-11	CARBON 100K 5% 1/4W	
R235	1-249-417-11	CARBON 1K 5% 1/4W	F
R236	1-249-434-11	CARBON 27K 5% 1/4W	
R237	1-249-441-11	CARBON 100K 5% 1/4W	
R238	1-249-441-11	CARBON 100K 5% 1/4W	
R239	1-249-417-11	CARBON 1K 5% 1/4W	F
R240	1-249-409-11	CARBON 220 5% 1/4W	F
R241	1-249-409-11	CARBON 220 5% 1/4W	F
R251	1-249-429-11	CARBON 10K 5% 1/4W	
R252	1-249-417-11	CARBON 1K 5% 1/4W	F
R253	1-249-429-11	CARBON 10K 5% 1/4W	
R254	1-249-441-11	CARBON 100K 5% 1/4W	
R255	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R256	1-249-417-11	CARBON 1K 5% 1/4W	F
R257	1-249-429-11	CARBON 10K 5% 1/4W	
R258	1-249-441-11	CARBON 100K 5% 1/4W	
R259	1-249-441-11	CARBON 100K 5% 1/4W	
R261	1-249-418-11	CARBON 1.2K 5% 1/4W	F
R262	1-249-435-11	CARBON 33K 5% 1/4W	
R263	1-247-895-00	CARBON 470K 5% 1/4W	
R264	1-249-429-11	CARBON 10K 5% 1/4W	
R265	1-249-417-11	CARBON 1K 5% 1/4W	F
R501	1-247-903-00	CARBON 1M 5% 1/4W	
R502	1-249-429-11	CARBON 10K 5% 1/4W	
R503	1-249-429-11	CARBON 10K 5% 1/4W	
R504	1-249-417-11	CARBON 1K 5% 1/4W	F
R505	1-249-429-11	CARBON 10K 5% 1/4W	
R506	1-249-393-11	CARBON 10 5% 1/4W	F
R507	1-249-417-11	CARBON 1K 5% 1/4W	F
R508	1-249-417-11	CARBON 1K 5% 1/4W	F
R510	1-249-417-11	CARBON 1K 5% 1/4W	F
R511	1-249-417-11	CARBON 1K 5% 1/4W	F
R512	1-249-417-11	CARBON 1K 5% 1/4W	F
R513	1-249-417-11	CARBON 1K 5% 1/4W	F
R515	1-247-811-31	CARBON 150 5% 1/4W	
R516	1-249-417-11	CARBON 1K 5% 1/4W	F
R517	1-247-811-31	CARBON 150 5% 1/4W	
R518	1-249-429-11	CARBON 10K 5% 1/4W	
R520	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R521	1-249-424-11	CARBON 3.9K 5% 1/4W	F

PANEL | SPEAKER | TRANSFORMER (A) | TRANSFORMER (B)

Ref. No.	Part No.	Description	Remark
R522	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R527	1-249-429-11	CARBON 10K 5% 1/4W	
R530	1-247-811-31	CARBON 150 5% 1/4W	
		< VARIABLE RESISTOR >	
RV201	1-223-200-11	RES, VAR, CARBON 10K/100K/100K (VOLUME)	
RV211	1-223-336-11	RES, VAR, CARBON 50K/50K (LEVEL)	
RV212	1-223-201-11	RES, VAR, CARBON 100K/100K (FREQUENCY)	
RV231	1-241-813-11	RES, VAR, CARBON 50K (MIC LEVEL)	
		< SWITCH >	
S501	1-572-184-11	SWITCH, KEYBOARD (SYSTEM POWER)	
S502	1-572-184-11	SWITCH, KEYBOARD (-20dB MUTING)	
S503	1-572-184-11	SWITCH, KEYBOARD (FUNCTION >)	
S504	1-572-184-11	SWITCH, KEYBOARD (FUNCTION <)	
		< VIBRATOR >	
X501	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	

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Ref. No.	Part No.	Description	Remark
*	1-651-460-11	SPEAKER BOARD *************	
		< CAPACITOR >	
C891	1-164-159-11	CERAMIC 0.1uF 50V	(G, IT)
C892	1-164-159-11	CERAMIC 0.1uF 50V	(G, IT)
		< CONNECTOR >	
* CN401	1-564-520-11	PLUG, CONNECTOR 5P	
		< JACK >	
J401	1-568-572-11	JACK, PIN 2P (SURROUND SPEAKER)	
		< RESISTOR >	
R891	1-249-397-11	CARBON 22 5% 1/4W	F (G, IT)
R892	1-249-397-11	CARBON 22 5% 1/4W	F (G, IT)
R893	1-249-397-11	CARBON 22 5% 1/4W	F (G, IT)
R894	1-249-397-11	CARBON 22 5% 1/4W	F (G, IT)
		< TERMINAL >	
TB401	1-537-445-11	TERMINAL BOARD (SP)(SPEAKER)	

****

Ref. No.	Part No.	Description	Remark
*	1-651-462-11	TRANSFORMER (A) BOARD ********************	

****

Ref. No.	Part No.	Description	Remark
*	1-651-463-11	TRANSFORMER (B) BOARD ********************	

****

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
7	1-765-194-11	WIRE (FLAT TYPE)(21 CORE)	
12	1-765-192-11	WIRE (FLAT TYPE)(15 CORE)	
14	1-751-216-31	LEAD (WITH CONNECTOR)(2 CORE)	
⚠CNJ904	1-526-794-11	OUTLET, AC	
⚠F901	1-532-259-00	FUSE (T1.6A)(AEP, UK, G, IT)	
⚠F901	1-532-285-00	FUSE (T1.25A)(E, AUS, EA, MY, SP, MX)	
⚠F902	1-532-286-00	FUSE (T2.5A)(E, AUS, EA, MY, SP, MX)	
⚠F903	1-532-286-00	FUSE (T2.5A)	
M601	1-541-953-11	MOTOR, DC FAN	
⚠T901	1-426-683-11	TRANSFORMER, POWER (AEP, G, IT)	
⚠T901	1-426-684-11	TRANSFORMER, POWER (UK)	
⚠T901	1-426-685-11	TRANSFORMER, POWER (E, AUS, EA, MY, SP, MX)	

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****
HARDWARE LIST
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Ref. No.	Part No.	Description	Remark
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#2	7-685-650-79	SCREW +BVTP 3X16 TYPE2 IT-3	
#3	7-682-547-09	SCREW +BVTT 3X6 (S)	
#4	7-682-548-04	SCREW +BVTT 3X8 (S)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Sony Corporation
Consumer A&V Products Company
Home A&V Division

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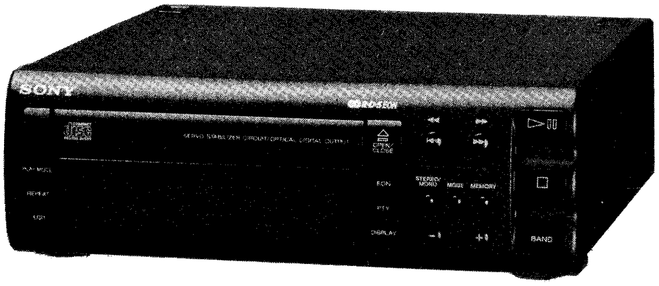
SERVICE MANUAL

AEP Model
UK Model



HCD-H4900 is the tuner, CD player section in MHC-4900.

Model Name Using Similer Mechanism	HCD-H7900
CD Mechanism Type	CDM14M-5BD13X
Base Unit Type	BU-5BD13X
Optical Pick-up Type	KSS-240A

SPECIFICATIONS

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	87.5 – 108.0 MHz
Antenna terminals	75 ohm unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range
  UK and European models (except Germany and Italy):
    MW: 531 – 1,602 kHz
    LW: 153 – 279 kHz
  German and Italian model:

Aerial (Antenna)	AM loop aerial (antenna) External aerial (antenna) terminals
Intermediate frequency	450 kHz

CD player section

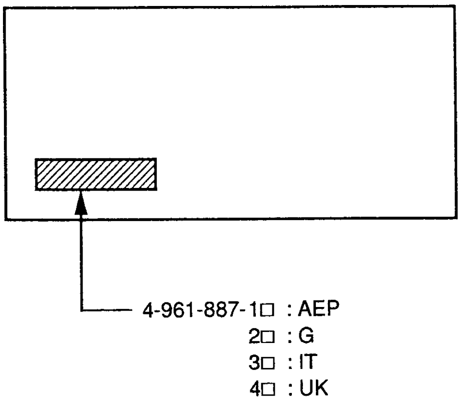
System	Compact disc digital audio system
Laser	Semiconductor laser
Wavelength	780 – 790 nm
Frequency response	2 Hz – 20 kHz
Signal-to-noise ratio	More than 95 dB
Dynamic range	More than 90 dB
Dimensions	Approx. 225 x 80 x 265 mm (w/h/d) (8 7/8 x 3 1/4 x 10 1/2 inches)
Mass	Approx. 2.3 kg (5 lb 2 oz)

TUNER/COMPACT DISC PLAYER

SONY®

MODEL IDENTIFICATION

— BACK PANEL —



- G : German model
  IT : Italian model

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION ;	INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ADVARSEL ;	USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO! ;	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA LASERSÄTEILYLLE.
VARNING ;	LASERSTRÅLNING NÄR DENNA DEL ÄR OPPNÅD OCH SPÄRREN ÄR URKOPPLAD.
ADVARSEL ;	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN.

This caution label is located inside the unit.

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6. ELECTRICAL PARTS LIST 46

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Note that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1

SERVICING NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

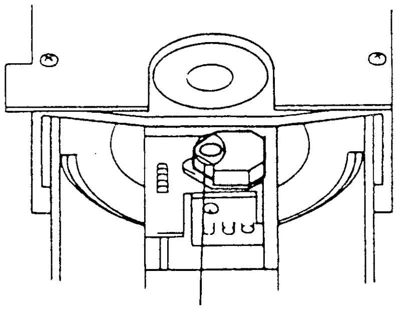
The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. (i.e., Static electricity)
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repain parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

1. Turn POWER switch on with no disc inserted and the disc table closed.
2. Confirm that the following operation is performed while observing the objective lens.

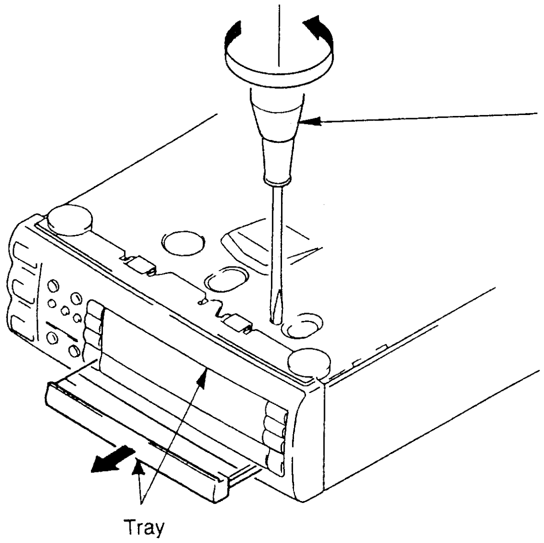


❶ Confirm that laser beam is on.
❷ Up and down motion of the objective lens. (3 times)

• POWER SUPPLIED WHILE SERVICING

This unit does not have its own power supply. It operates on the power supplied from the amplifier (TA-H4900), equalizer (SEQ-H4900) used by this series. Therefore when making electric-related repairs connect the amplifier when servicing the unit.

HOW TO OPEN THE DISC TRAY WHEN POWER IS OFF



Insert a flat driver into the aperture of the bottom of the unit, and turn in the direction of arrow (toward OUT direction).

* To close the disc tray, turn the driver in the opposite direction (toward IN direction).

Note : Do not turn the set upside down when a disc is inside.

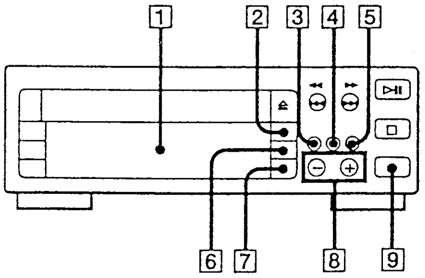
SECTION 2

GENERAL

This section is extracted from instruction manual.

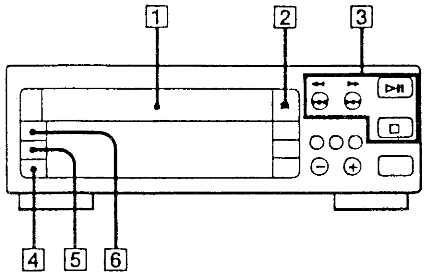
Front Panel

Tuner section



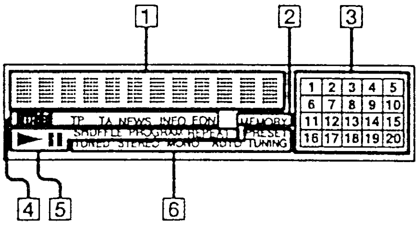
1 Display window (7, 10)
2 EON (Enhanced Other Networks) button (12)
3 STEREO/MONO button (10)
4 MODE button (10)
5 MEMORY button (11)
6 PTY (Programme Type) button (13)
7 DISPLAY button (11)
8 –/+ buttons (10)
9 BAND button (10)

CD player section



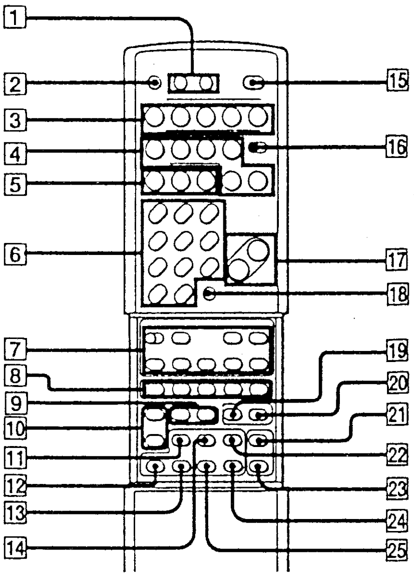
1 Disc tray (7)
2 ⏏ OPEN/CLOSE (open/close of the disc tray) (7, 15)
3 CD player operating buttons
|◀◀ ◀◀ ▶▶ ▶▶| (manual search/AMS) (7)
▷II (play/pause) (7, 15)
□ (stop) (7, 15)
4 EDIT button (17)
5 REPEAT button (9)
6 PLAY MODE button (8)

Display Window


1
2
3
TP TA NEWS INFO EON
MEMORY
SHUFFLE PROGRAM REPEAT
PRESET
TUNED STEREO MONO AUTO TUNING
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
4
5
6

1 Frequency/playing time indication (7, 10)
2 MEMORY indication (11)
3 Music calendar/preset radio station numbers (7, 11)
4 RDS service indications (12)
5 CD play mode indication (7)
6 Tuner indication (10)

Remote commander


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

1 TAPE DECK A/B buttons (14)
2 SLEEP button (23)
3 CD/MD operating buttons (7)
4 Cassette deck operating buttons (14)
5 Tuner operating buttons (10)
6 CD/Tuner/numeric buttons (7, 11)
7 VCR operating buttons (26)
8 TV operating buttons (26)
9 MENU 1, 2 button (15, 20)
10 FUNCTION </> buttons (16, 25, 26)
11 CONTINUE button (8)
12 CHECK button (9)
13 CLEAR button (9)
14 SHUFFLE button (8)
15 SYSTEM POWER switch (7)
16 CD/MD switch (7)
17 VOLUME +/– buttons (7, 20)
18 MUTING button (20)
19 P.FILE button (22)
20 DIRECT button (15, 21)
21 RDS EON button (12)
22 PROGRAM button (8)
23 DISPLAY button (21)
24 TIME button (8)
25 REPEAT button (9)

SECTION 3

ELECTRICAL ADJUSTMENTS

TUNER SECTION

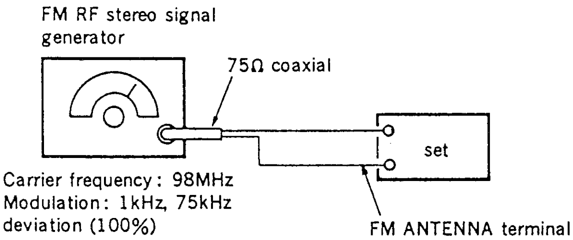
Precautions in Repairing

If the front end unit fails, it is difficult to repair the inner circuits, so replace the entire front end unit.

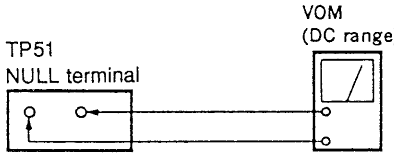
FM SECTION

FM Discriminator Adjustment (NULL Adjustment)

Setting :
BAND : FM


FM RF stereo signal generator
75Ω coaxial
set
FM ANTENNA terminal

Carrier frequency: 98MHz
Modulation: 1kHz, 75kHz deviation (100%)
Output level: 1mV (60dBμ)

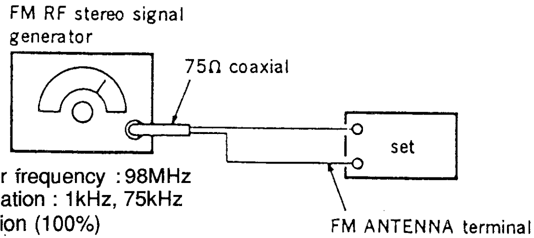

VOM
(DC range)
TP51
NULL terminal

Procedure :
1. Tune the set to 98MHz.
2. Adjust IFT51 to a 0Vdc reading on the VOM.

Note : FM Tuning Level adjustment should be made after the FM discriminator alignment.

FM Tuned Indication Lighting Level

Setting :
BAND : FM


FM RF stereo signal generator
75Ω coaxial
set
FM ANTENNA terminal

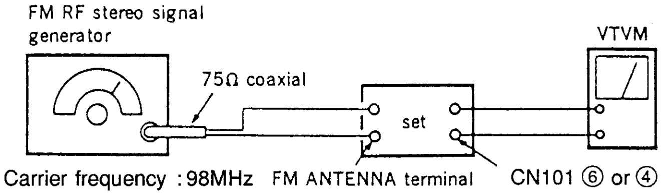
Carrier frequency : 98MHz
Modulation : 1kHz, 75kHz deviation (100%)
Output level : 0.018mV (25dBμ) (AEP, UK model)
0.013mV (22dBμ) (G, IT model)

Procedure :
1. Tune the set to 98MHZ.
2. Adjust RV52 so that the TUNED indicator goes on.

Note :
IT : Italian model
G : German model

FM Stereo Separation Adjustment

Setting :
BAND : FM


FM RF stereo signal generator
75Ω coaxial
set
VTVM
FM ANTENNA terminal
CN101 ⑥ or ④

Carrier frequency : 98MHz
Modulation : 1kHz, 75kHz deviation (100%)
Output level : 1mV (60dBμ)

Modulation :	L+R	33.75kHz deviation
	L-R	33.75kHz deviation
	Plilot Signal 19kHz (AEP, UK model)	7.5kHz deviation
	L+R	20kHz deviation
	L-R	20kHz deviation
	Plilot Signal 19kHz (G, IT model)	7.5kHz deviation

Procedure :
Tune the set to 98MHz.

FM stereo Signal generator Output Channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV53 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV53 for minimum reading.

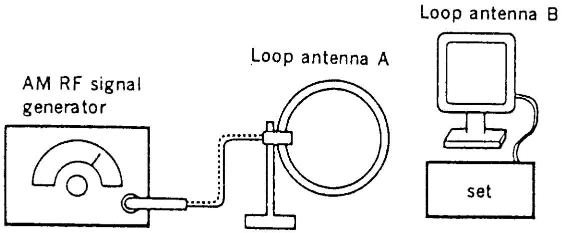
L-CH Stereo separation : Ⓐ – Ⓑ
R-CH Stereo separation : Ⓒ – Ⓓ

The separation of both channels should be equal.

AM SECTION

AM Tuner Indication Lighting Level

Setting :
BAND : MW

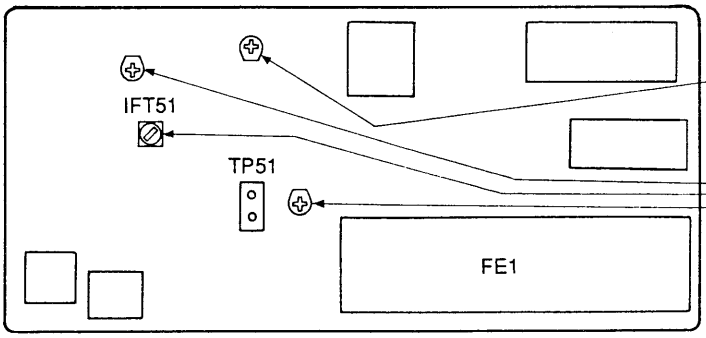

Loop antenna B
Loop antenna A
AM RF signal generator
set

Carrier frequency : 999kHz
Modulation : 400Hz, 30% modulation

Procedure :
1. Set loop antenna A so that the loop antenna B input level is 55 dBμ/m (0.6m V/m).
2. Tune the set to 999kHz.
3. Adjust RV51 so that the TUNED indicator goes on.

Adjust Location

TCB BOARD — Component Side —



RV51 : Tuned Indication Lighting Level (AM).

RV53 : Stereo Separation Adjustment (FM).

IFT51 : NULL Adjustment (FM).

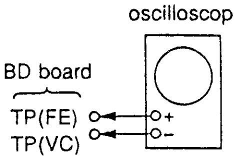
RV52 : Tuned Indication Lighting Level (FM).

CD SECTION

Note :

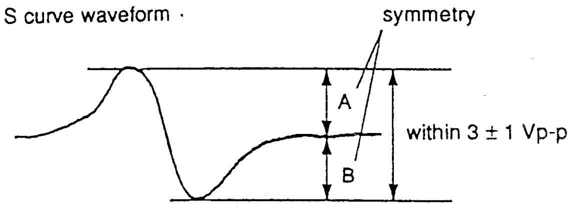
1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens using an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check


oscilloscope
BD board
TP(FE)
TP(VC)
+
−

Procedure :

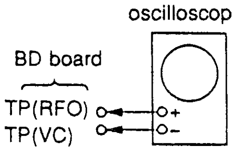
1. Connect oscilloscope to test point TP (FE) on BD board.
2. Connect between test point TP (FEI) and TP (VC) by lead wire.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and turn Power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out.)
5. Check if the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3±1 Vp-p.


S curve waveform
symmetry
A
B
within 3 ± 1 Vp-p

6. After check, remove the lead wire connected in step 2.

Note : • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Set sweep time as long as possible and set the brightness to obtain best waveform.

RF Level Check

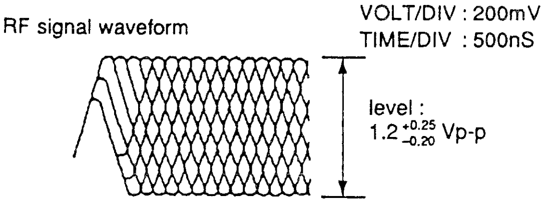

oscilloscope
BD board
TP(RFO)
TP(VC)
+
−

Procedure :

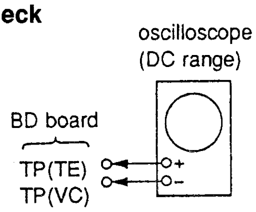
1. Connect oscilloscope to test point TP (RFO) on BD board.
2. Turn Power switch on.
3. Put disc (YEDS-18) in and playback.
4. Confirm that oscilloscope waveform is clear and check if RF signal level is correct or not.

Note :

A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.

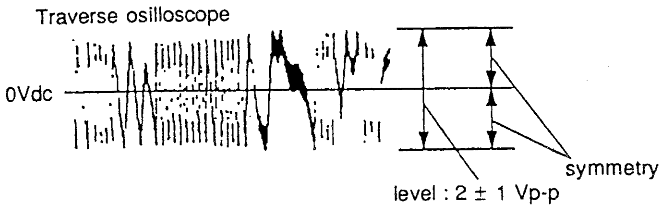

RF signal waveform
VOLT/DIV : 200mV
TIME/DIV : 500nS
level :
1.2 +0.25 −0.20 Vp-p

E-F Balance Check


oscilloscope
(DC range)
BD board
TP(TE)
TP(VC)
+
−

Procedure :

1. Connect test point TP (ADJ) on MAIN board to ground and TP(TEI) to TP (VC) with a lead wire.
2. Connect oscilloscpe to test point TP (TE) on BD board.
3. Turn Power switch on.
4. Put disc (YEDS-18) in and playback.
5. Confirm that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0V, and check this level.

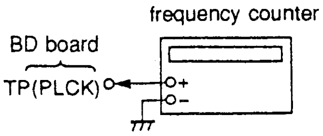

Traverse osilloscope
0Vdc
symmetry
level : 2 ± 1 Vp-p

6. Remove the lead wire connected in step 1.

RF PLL Free-run Frequency Check

Procedure :

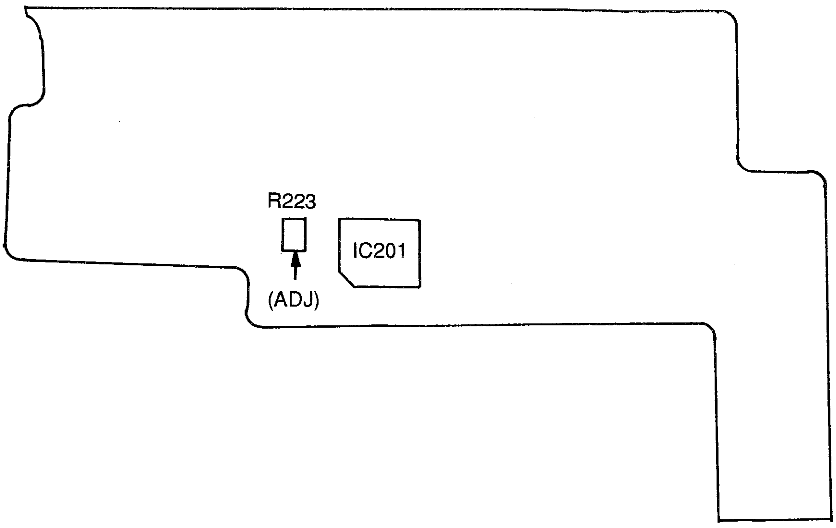
1. Connect frequency counter to test point (PLCK) with lead wire.


frequency counter
BD board
TP(PLCK)
+
−

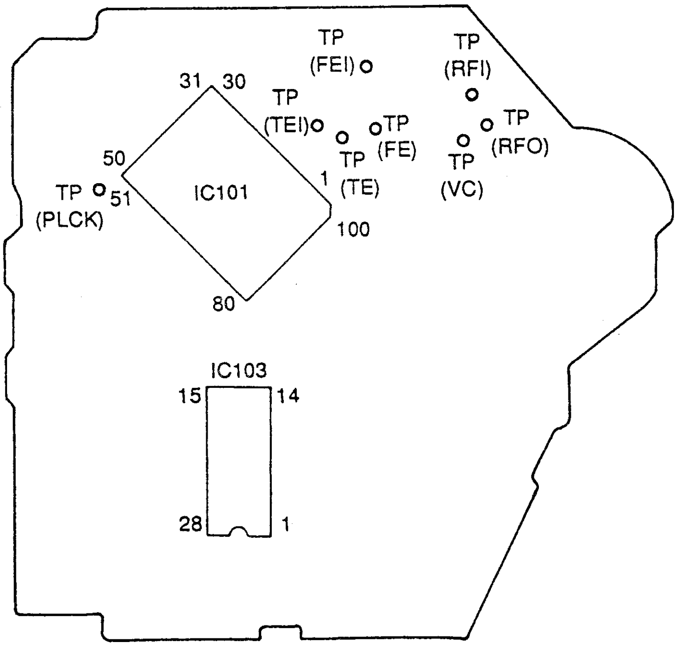
2. Turned Power switch on.
3. Confirm that reading on frequency counter is 4.3218MHz.

Adjustment Location :

[MAIN BOARD] — Conductor Side —

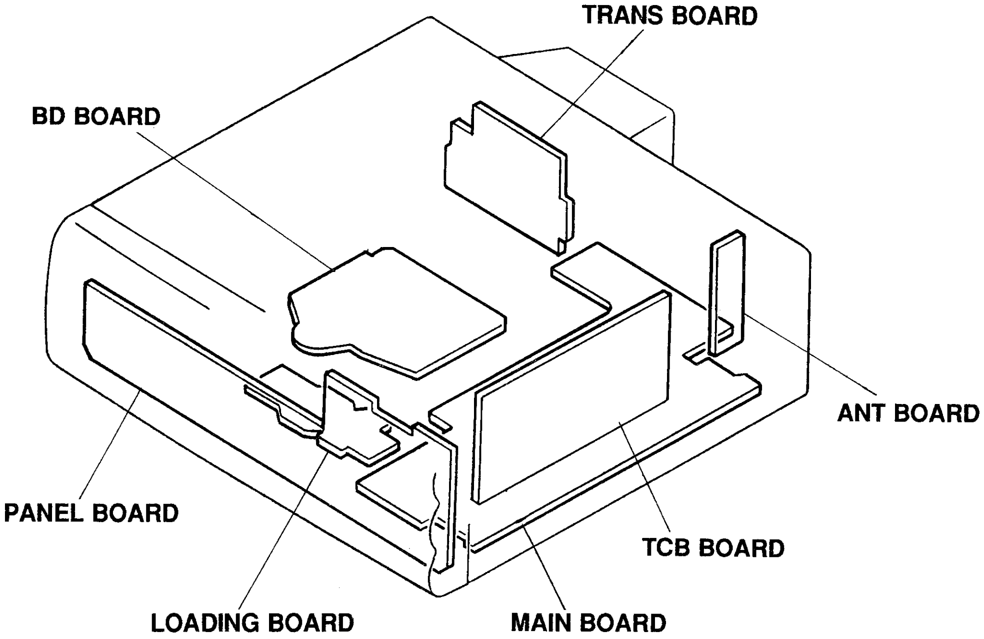

R223
IC201
(ADJ)

[BD BOARD] — Side B —


TP (FEI)
TP (RFI)
31
30
TP (TEI)
TP (FE)
TP (TE)
TP (RFO)
TP (VC)
50
TP (PLCK)
51
IC101
1
100
80
IC103
15
14
28
1

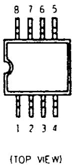
SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARD LOCATION

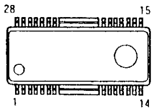

TRANS BOARD
BD BOARD
ANT BOARD
PANEL BOARD
TCB BOARD
LOADING BOARD
MAIN BOARD

4-2. SEMICONDUCTOR LEAD LAYOUTS

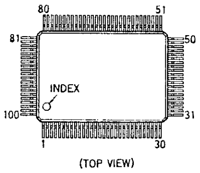
BA6287F
μPC4558G2


8 7 6 5
1 2 3 4
(TOP VIEW)

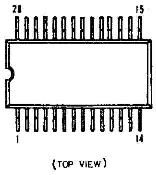
BA6392FP



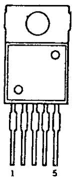
CXD2515Q


80
51
81
50
INDEX
100
31
1
30
(TOP VIEW)

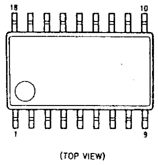
CXD2565AM


28
15
1
14
(TOP VIEW)

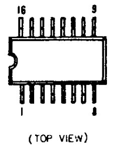
L78MR06



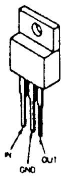
LC7073M


18
10
1
9
(TOP VIEW)

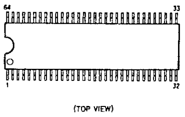
M5290FP
SAA6579T
TC9215F


16
9
1
8
(TOP VIEW)

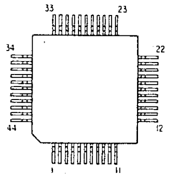
M5F78M07L



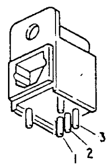
M66004M6FP


64
33
1
32
(TOP VIEW)

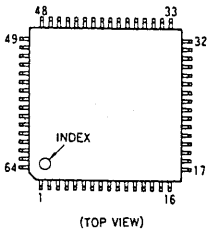
TMP87CH47U-4103


33
23
34
22
44
12
1
11

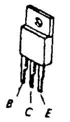
TOTX178



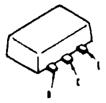
μPD78013GC-593-AB8


48
33
49
32
INDEX
64
17
1
16
(TOP VIEW)

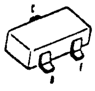
2SB1094-LK
2SD2012-LC



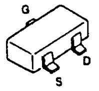
2SB1122-S
2SB798-DL
2SD999-CLCK



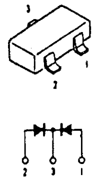
2SA1344
2SC1623-L5L6
2SC3395
2SC3398
2SC3900



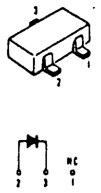
2SK208-GR3



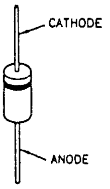
DCB010



UZM10B
UZM11Z
UZM4.7B



HZS30-2L
10E2


CATHODE
ANODE

4-3. BLOCK DIAGRAM

TM101
ANTENNA
FM 75 Ω COAXIAL
AM
FE1
FM FRONT END
ANT IN
IF OUT
VT
F OUT
B+
Q3
B+ SWITCH
B+ (+10V)
CF1
10.7MHz
Q1
RF AMP
EXCEPT G, IT MODEL
CF2
Q2
RF AMP
G, IT MODEL
CF51
10.7MHz
FE3 (LW)
G, IT MODEL
Q4
SWITCHING
AEP, UK MODEL
Q7
SWITCHING
Q5
SWITCHING
Q6
SWITCHING
FE2 (MW (AM))
Q22, 23
LPF
Q24, 25
LPF
09
MW
LW/MW
PD1
PD2
FM OSC IN
FM
VDD
IF REQ
AM IF IN
FM IF IN
D21, Q21
+5V
REG
IC21
PLL
VCO STOP
AM OSC IN
CE
DATA IN
CLOCK
DATA OUT
X21
7.2MHz
RV52
FM TUNED LIGHT LEVEL
TP51
FM IN
FM AHC
V REF
FM DET OUT
AM OSC
AM RF IN
VCO
X51
456KHz
IF BUFF
D51
FM/AM
FM SD ADJ
TUNED
STEREO
TUNED LED
STEREO LED
FL51
EXCEPT G, IT MODEL
IC51
FM DET.MPX
AM IF.DET
MPX IN
L CH
R CH
AM MIX
AM IF
AM SD ADJ
MUTE
DET
SEP
IFT52
RV51
MW (AM) TUNED LIGHT LEVEL
Q53
MUTING SWITCH
IFT51
NULL
RV53
SEPARATION
KEY MATRIX
S601-610,
S614-617,
S618-620
UK, IT MODEL
IC305
BUFFER
IC304
RDS SYSTEM DEMODULATOR
MXIN
RDDA
RCOUT
QUAL
OSC OUT
OSC IN
X304
4.332MHz
IC306
RDS SYNC/ ERROR CORRECTION
DIN
CIN
DOUT
COUT
DST
RES
OSC1
OSC2
X306
4MHz
X301
10MHz
IC301
TUNER SYSTEM CONTROLLER
DATA OUT
X2
X1
SIGNAL
STEREO
SDATA
SCK
CS
RESET
BACK UP
POWER
AU BUS OUT
KEY1 - KEY3
AU BUS IN
CD BUSY
RDS ID
D0 - D3
KEY REQ (CD)
DP CLK (CD)
RDS RESET
ANLOG BUS CONTROL
RDS START
RDS CLK
RDS DATA
IC103
RESET
+13V
Q311, 312
RESET SWITCH
Q315, D315
AU BUS SWITCHING
Q319
ANALOG BUS CONTROL SW
IC601
FL DRIVE
DIG00-11, 13, 12
SEG00-34
Q603
GRID DRIVE
13G-2G, 14G, 1G
P1-35
FL601
FLUORESCENT INDICATOR TUBE
F1
F2
VF1
VF2
OPTICAL PICK-UP BLOCK (KSS-240A)
IC1
RF AMP
DETECTOR
E
F
A
B
C
D
RF AMP
RFO
FOCUS ERROR AMP
FE
FA
VR3
FOCUS BIAS
VC
TRACKING ERROR AMP
TE
TE+
FO
VR2
E-F BALANCE
LASER DIODE
LD
PD
TR1
LD DRIVE
VR1
LD POWER
AUTOMATIC POWER CONTROL
LDON
INTEGRATOR
INTE-GRATOR
IC101
DIGITAL SIGNAL PROCESSOR
XTAI
MD2
DOUT
ASYO
RFAC
ASYI
SUBQ
SQCK
DATA
LRCK
BCLK
MUTE
SCOR
RFDC
SE
FE
XLAT
CLOCK
SENS
XRST
SCLK
SSTP
TFDR
TRDR
FFDR
FRDR
SRDR
SFDR
MDP
+5V
CD DIGITAL OPTICAL OUT
IC204
DIGITAL OPTICAL OUT
IC102
FOCUS/TRACKING COIL DRIVE, SPINDLE/SLED MOTOR DRIVE
TRACKING COIL
FOCUS COIL
T+
T-
F+
F-
M102
SLED MOTOR
M101
SPINDLE MOTOR
S101
LIMIT
IC103
DIGITALFILTER D/A CONVERTER
384FS
XOUT
XIN
X101
33.8MHz
ATT
SHIFT
LATCH
INIT
SYSM
L1 (+)
L2 (+)
R1 (+)
R2 (+)
R-CH
MUTER
R-CH SAME AS L-CH
MUTEL
IC250
LINE AMP
Q250
SWITCH
Q255
MUTING
IC321
CD SYSTEM CONTROL
PRGL
SENSE
SCOR
AMUTE
CLK
XLT
SCLK
SQCLK
SUBQ
TP (AFJ)
TP (ADJ)
AFADJ
ADJ
S152
LOAD IN
INSW
S151
LOAD OUT
OUTSW
IC203
MOTOR DRIVE
M151
LOADING MOTOR
OUT1
OUT2
FIN
RIN
LD IN
LD OUT
X201
8MHz
ASW
AUD BUS OUT
AUD BUS IN
Q210
AU BUS SWITCH
IC SW
DPDAT0 - DPDAT3
KYEREQ
DPCLK
IC501
CD/TUNER OUTPUT SWITCH
TUNER
CD
CN101
SYSTEM CONTROL
ANALOG BUS L
ANALOG BUS R
AU BUS
AC
T801
POWER TRANSFORMER
D101, 102
+RECTIFIER
D105, 106
-RECTIFIER
Q110, 111, 115
+10V REG
(IC501) +10V (UNSW)
Q112
POWER SW
(IC21, 51, 305) +10V (SW)
IC102
+7V REG
(BD-IC102, 203) +7V
IC103
+5V REG/ RESET
(IC201, 301, 304, 306, 601) +5V
Q140
+5V REG
(IC101, 103, 204, 205) +5V (SW)
IC104
+5V/-5V REG/RESET
Q147, 148
CD ON/OFF SW
ON
RESET
+5V
CO+
VIN+
-5V
EO-
VIN-
Q150
-5V REG
(IC205) -5V (SW)
(IC501) -13V
Q801
-28V REG
D801-803
-FL RECTIFIER
(IC601) -28V

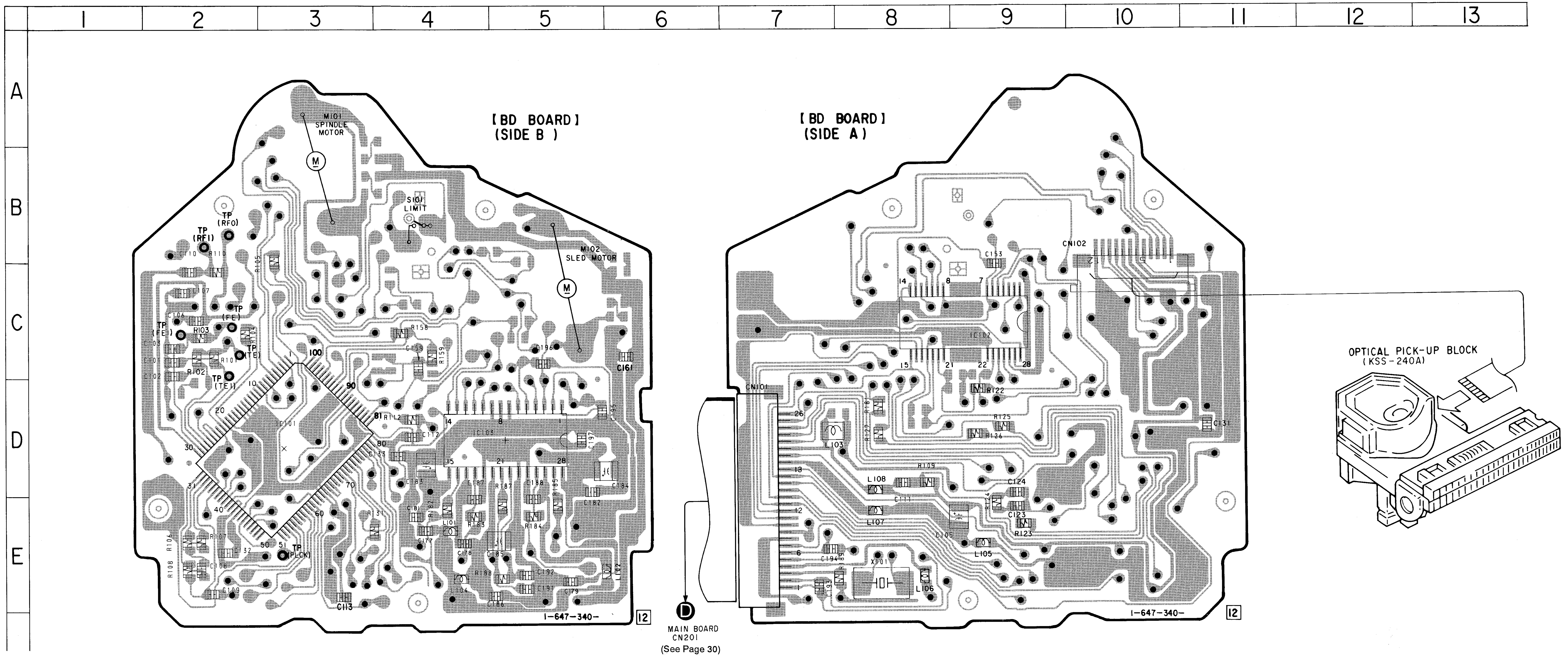
- R-CH is omitted.
- Signal path.
  ⇨ :FM
  ⇛ :MW (AM)
  ▨⇨ :CD
  ▨⇛ :digital out
- G :German model.
  IT :Italian model.

4-4. PRINTED WIRING BOARD — CD SECTION —

- See page 9 for Circuit Boards Location.
- See page 10 for Semiconductor Lead Layouts.

- Semiconductor Location

Ref. No.	Location
IC101	D-3
IC102	C-9
IC103	D-5



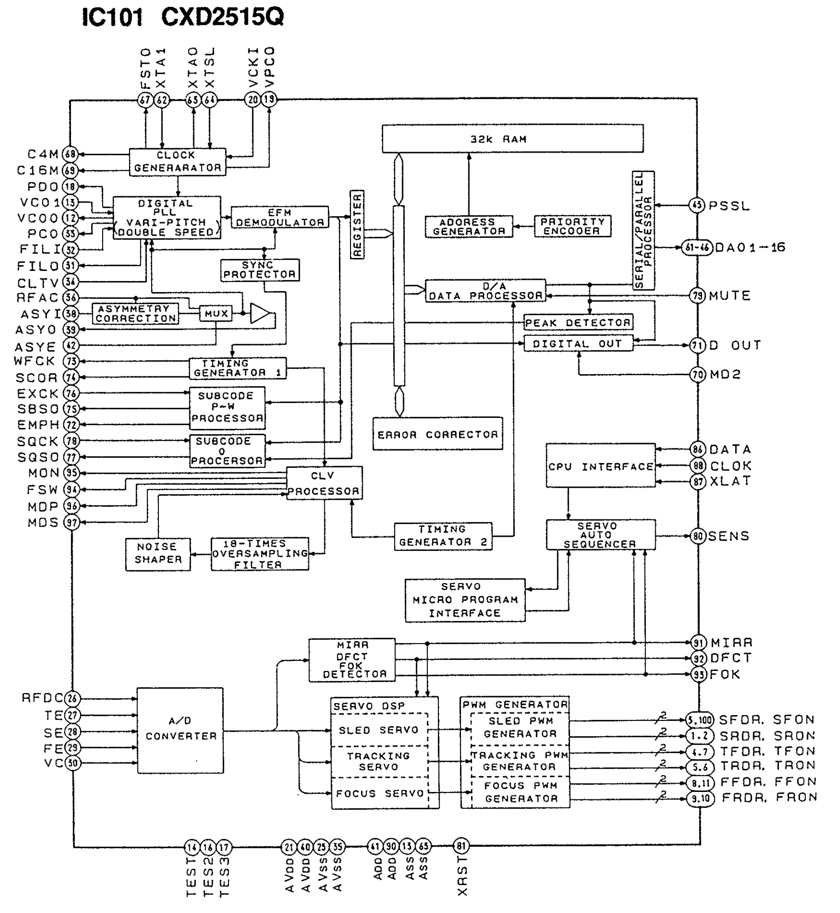
1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
[BD BOARD] (SIDE B)
M101 SPINDLE MOTOR
S101 LIMIT
M102 SLED MOTOR
TP (RFO)
TP (RFI)
TP (FE)
TP (FEI)
TP (TE)
TP (TEI)
TP (PLCK)
IC101
IC103
C161
C113
1-647-340-
12
[BD BOARD] (SIDE A)
CN101
CN102
IC102
L103
L105
L106
L107
L108
X101
C131
1-647-340-
12
D
MAIN BOARD CN201
(See Page 30)
OPTICAL PICK-UP BLOCK (KSS-240A)

Note:

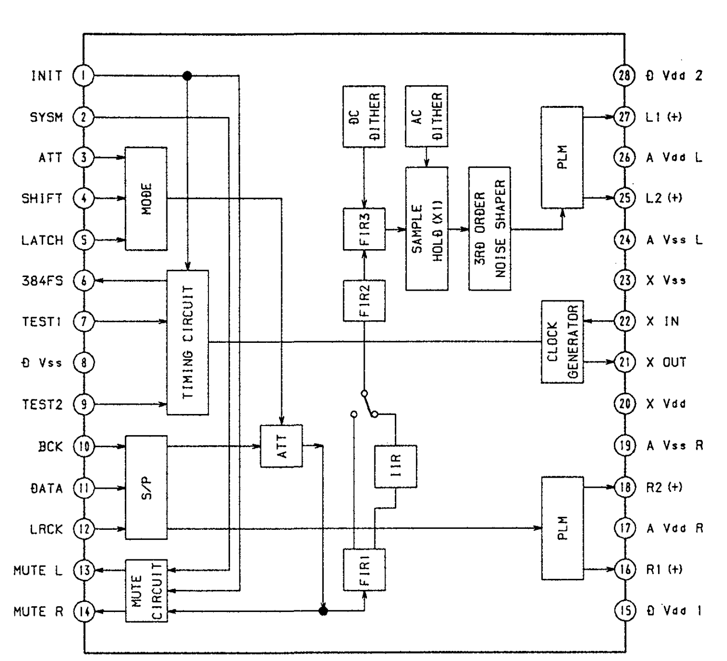
- ○—— : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern from the side which enable seeing. (The other layer's patterns are not indicated.)

- **IC Block Diagrams**

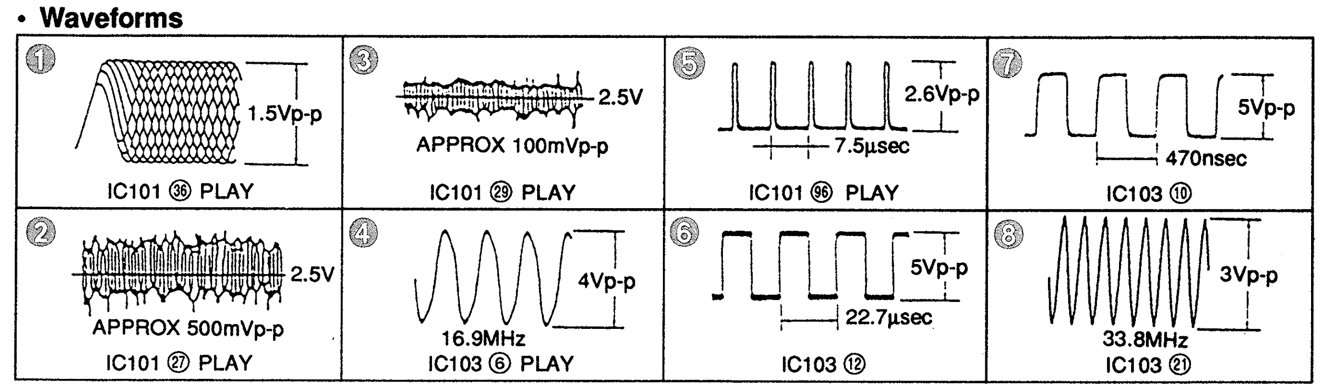
IC101 CXD2515Q


CLOCK GENERATOR
32k RAM
DIGITAL PLL
VARI-PITCH DOUBLE SPEED
EFM DEMODULATOR
ADDRESS GENERATOR
PRIORITY ENCODER
SYNC PROTECTOR
D/A DATA PROCESSOR
ASYMMETRY CORRECTION
PEAK DETECTOR
DIGITAL OUT
TIMING GENERATOR 1
SUBCODE P-W PROCESSOR
SUBCODE Q PROCESSOR
ERROR CORRECTOR
CPU INTERFACE
CLV PROCESSOR
TIMING GENERATOR 2
NOISE SHAPER
1bit DAC OVERSAMPLING FILTER
SERVO AUTO SEQUENCER
SERVO MICRO PROGRAM INTERFACE
A/D CONVERTER
MIRR DFCT FOK DETECTOR
SERVO DSP
SLED SERVO
TRACKING SERVO
FOCUS SERVO
PWM GENERATOR
SLED PWM GENERATOR
TRACKING PWM GENERATOR
FOCUS PWM GENERATOR
PSSL
DA01~16
MUTE
D OUT
MD2
DATA
CLOK
XLAT
SENS
MIRR
DFCT
FOK
SFDR SFON
SRDR SRON
TFDR TFON
TRDR TRON
FFDR FFON
FRDR FRON

IC103 CXD2565AM

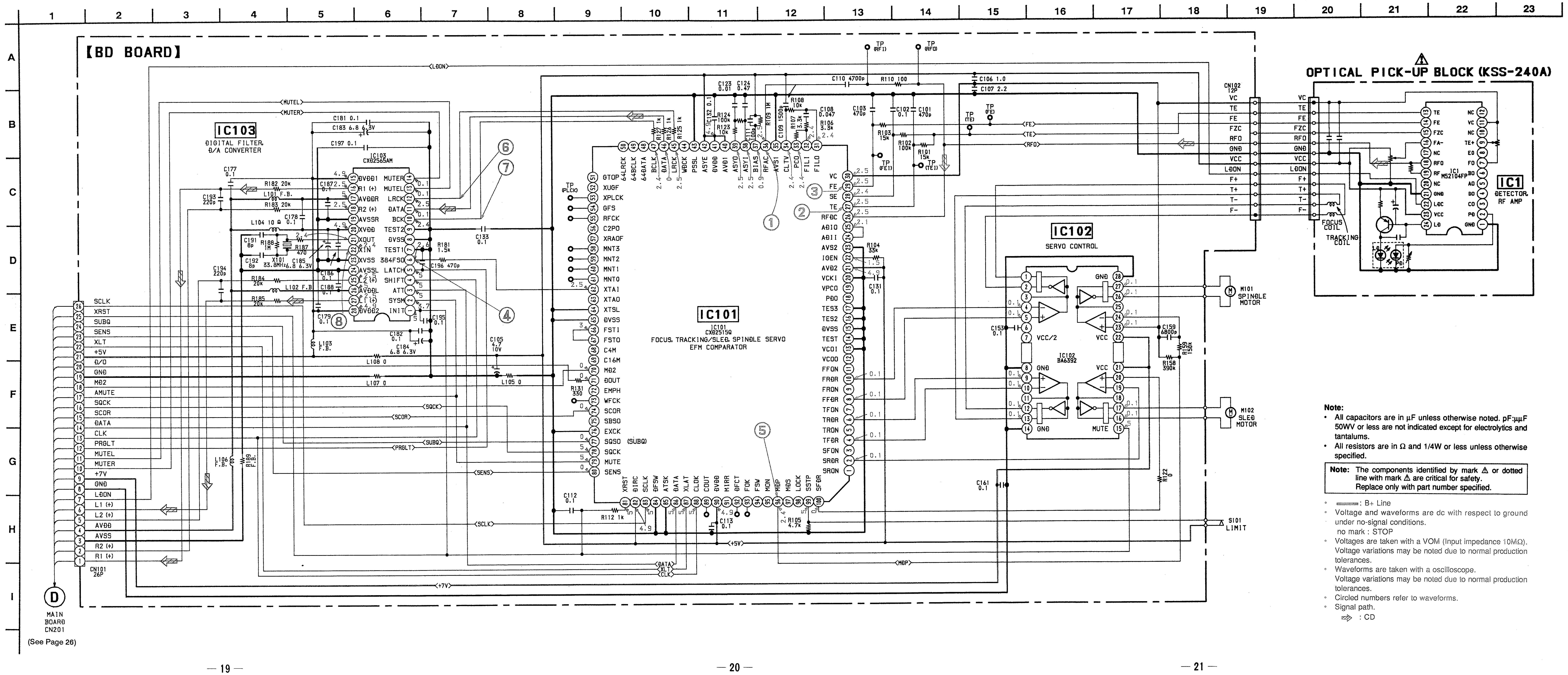

INIT
SYSM
ATT
SHIFT
LATCH
384FS
TEST1
D Vss
TEST2
BCK
DATA
LRCK
MUTE L
MUTE R
MODE
TIMING CIRCUIT
S/P
MUTE CIRCUIT
ATT
DC DITHER
AC DITHER
SAMPLE HOLD
5TH ORDER NOISE SHAPER
CLOCK GENERATOR
PLM
D Vdd 2
L1 (+)
A Vss L
L2 (+)
A Vdd L
X Vss
X IN
X OUT
X Vdd
A Vss R
R2 (+)
A Vdd R
R1 (+)
D Vdd 1

- **Waveforms**


①
1.5Vp-p
IC101 ㊱ PLAY
③
2.5V
APPROX 100mVp-p
IC101 ㉙ PLAY
⑤
2.6Vp-p
7.5μsec
IC101 (96) PLAY
⑦
5Vp-p
470nsec
IC103 ⑩
②
2.5V
APPROX 500mVp-p
IC101 ㉗ PLAY
④
4Vp-p
16.9MHz
IC103 ⑥ PLAY
⑥
5Vp-p
22.7μsec
IC103 ⑫
⑧
3Vp-p
33.8MHz
IC103 ㉑

4-5. SCHEMATIC DIAGRAM — CD SECTION —

- See pages 37 to 39 for IC Pin Functions. (IC101) (IC103)


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
A B C D E F G H I
【BD BOARD】
IC103
DIGITAL FILTER, D/A CONVERTER
IC103 CXD2565AM
IC101
IC101 CXD2515Q
FOCUS, TRACKING/SLED, SPINDLE SERVO
EFM COMPARATOR
IC102
SERVO CONTROL
IC102 BA6392
OPTICAL PICK-UP BLOCK (KSS-240A)
IC1
DETECTOR, RF AMP
IC1 MS2104FP
FOCUS COIL
TRACKING COIL
CN102 12P
VC
TE
FE
FZC
RFO
GND
VCC
LDON
F+
T+
T-
F-
M101 SPINDLE MOTOR
M102 SLED MOTOR
S101 LIMIT
SCLK
XRST
SUBQ
SENS
XLT
+5V
D/D
GND
MD2
AMUTE
SQCK
SCOR
DATA
CLK
PROLT
MUTEL
MUTER
+7V
GND
LDON
L1 (+)
L2 (+)
AVDD
AVSS
R2 (+)
R1 (+)
CN101 26P
D
MAIN BOARD CN201
(See Page 26)

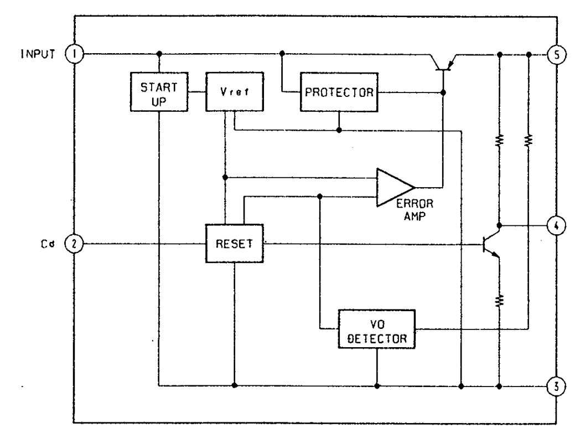
Note:
- All capacitors are in μF unless otherwise noted. pF:μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

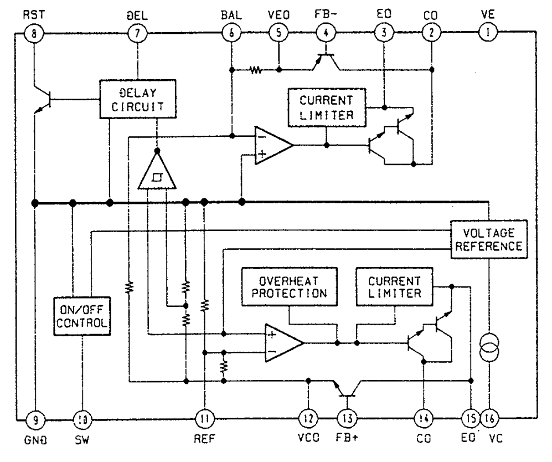
- ▬ : B+ Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : STOP
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : CD

• IC Block Diagrams

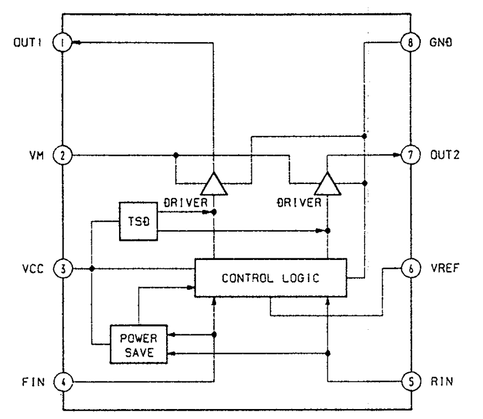
IC103 L78MR06


INPUT
OUTPUT
START UP
Vref
PROTECTOR
ERROR AMP
RESET
RESET OUT
Vo DETECTOR
Cd
GND

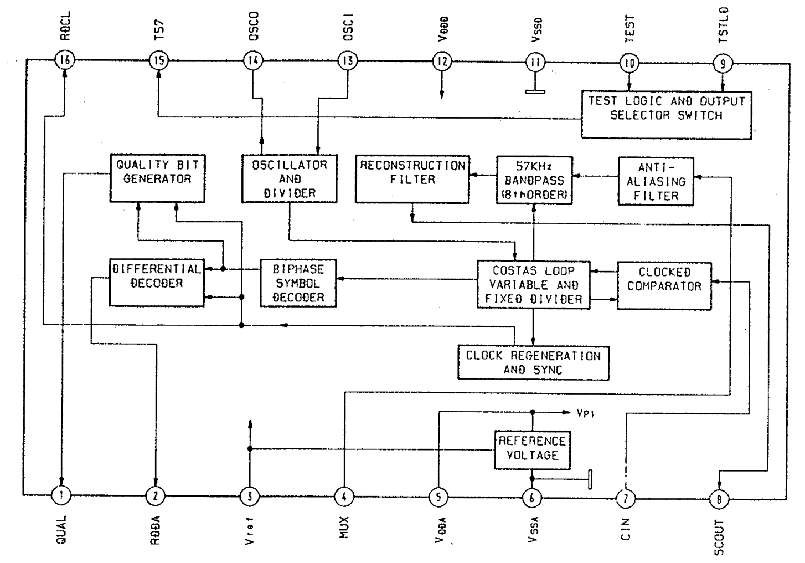
IC104 M5290FP


RST
DEL
BAL
VEO
FB-
CO
CC
VE
DELAY CIRCUIT
CURRENT LIMITER
VOLTAGE REFERENCE
ON/OFF CONTROL
OVERHEAT PROTECTION
CURRENT LIMITER
GND
SW
REF
VCC
FB+
CO
EO
VC

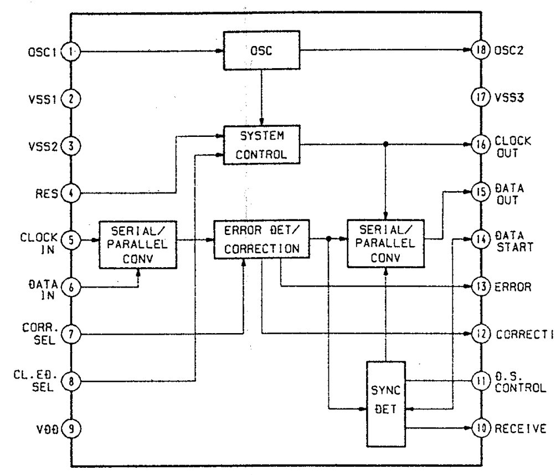
IC203 BA6287F


OUT1
GND
VM
OUT2
TSD
DRIVER
DRIVER
VCC
CONTROL LOGIC
VREF
POWER SAVE
FIN
RIN

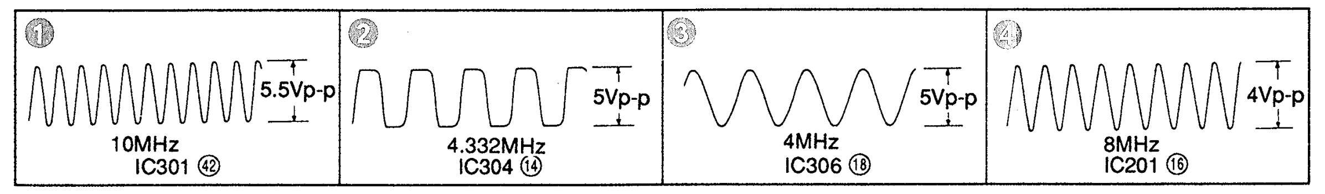
IC304 SAA6579T


TEST LOGIC AND OUTPUT SELECTOR SWITCH
QUALITY BIT GENERATOR
OSCILLATOR AND DIVIDER
RECONSTRUCTION FILTER
57KHz BANDPASS (8-ORDER)
ANTI-ALIASING FILTER
DIFFERENTIAL DECODER
BIPHASE SYMBOL DECODER
COSTAS LOOP VARIABLE AND FIXED DIVIDER
CLOCKED COMPARATOR
CLOCK REGENERATION AND SYNC
REFERENCE VOLTAGE

IC306 LC7073M


OSC1
OSC2
VSS1
VSS3
VSS2
CLOCK OUT
RES
DATA OUT
CLOCK IN
DATA START
DATA IN
ERROR
CORR SEL
CORRECTION
CL.EG SEL
E.S. CONTROL
VDD
RECEIVE
OSC
SYSTEM CONTROL
SERIAL/PARALLEL CONV
ERROR DET/CORRECTION
SERIAL/PARALLEL CONV
SYNC DET

• Waveforms



4-6. SCHEMATIC DIAGRAM — MAIN SECTION —

• See pages 40 to 42 for IC Pin Functions. (IC201) (IC301)

1
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13
14
15
16
17
18
19
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21
22
23
24
25
26
27
28
29
30
31
32
A
B
C
D
E
F
G
H
I
J
K
(See Page 35)
(See Page 36)
(See Page 36)
(See Page 19)
MAIN BOARD
ANT BOARD
PANEL BOARD
TRANS BOARD
LOADING BOARD
IC301
IC201
IC305
IC304
IC306
IC204
IC205
IC104
IC103
IC203
IC601
IC501
IC102

Note:

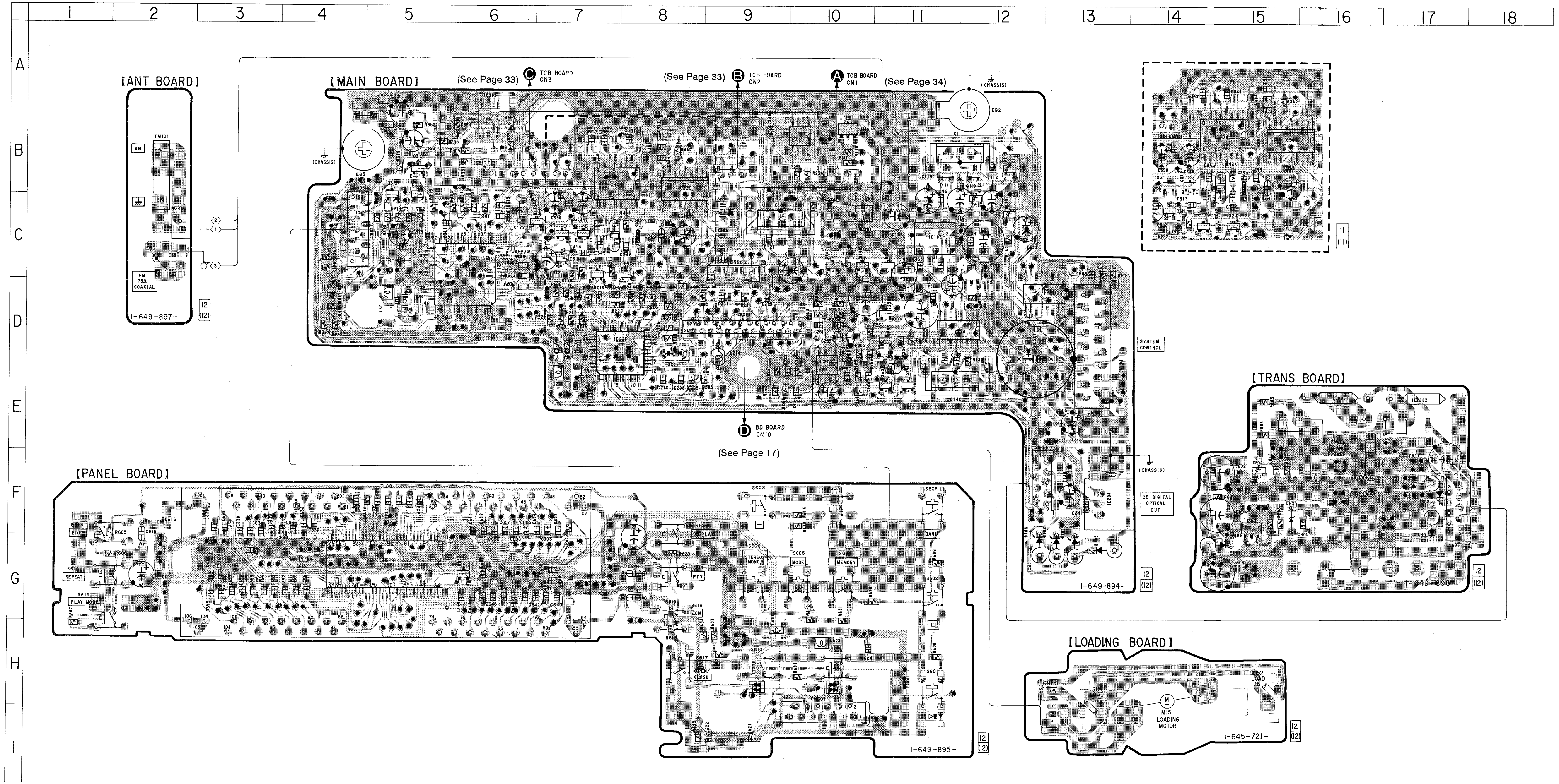
- All capacitors are in µF unless otherwise noted. pF:µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬ : B+ Line
- ▬ : B– Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : FM
  ( ) : CD STOP
  * : can not be measured.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : FM
  ⇨ : CD
  ⇨ : digital out
- IT : Italian model.

4-7. PRINTED WIRING BOARD — MAIN SECTION —

- See page 9 for Circuit Boards Location.
- See page 10 for Semiconductor Lead Layouts.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
[ANT BOARD]
AM
FM 75Ω COAXIAL
1-649-897-
12 (12)
[MAIN BOARD]
(See Page 33)
C TCB BOARD CN3
(See Page 33)
B TCB BOARD CN2
A TCB BOARD CN1
(See Page 34)
(CHASSIS)
EB2
EB3
IC201
D BD BOARD CN101
(See Page 17)
SYSTEM CONTROL
CD DIGITAL OPTICAL OUT
1-649-894-
12 (12)
11 (11)
[TRANS BOARD]
1-649-896-
12 (12)
[PANEL BOARD]
FL601
S614 EDIT
S616 REPEAT
S615 PLAY MODE
S608
S607
S603
DISPLAY
BAND
S606 STEREO/MONO
S605 MODE
S604 MEMORY
PTY
S618 TON
S617 OPEN/CLOSE
1-649-895-
12 (12)
[LOADING BOARD]
M M151 LOADING MOTOR
S151 LOAD OUT
S152 LOAD IN
1-645-721-
12 (12)

- **Semiconductor Location**

Ref. No.	Location
D101	G-13
D102	G-13
D105	G-13
D106	G-12
D110	C-12
D111	B-11
D135	C-11
D160	C-12
D172	C-7
D210	C-8
D311	C-7
D315	C-5
D801	F-17
D802	F-17
D803	G-15
D804	F-15
D805	F-15
IC102	C-9
IC103	C-11
IC104	D-12
IC201	D-8
IC203	B-10
IC204	F-13
IC205	E-10
IC301	C-6
IC304	B-7
IC305	B-6
IC306	B-8
IC501	D-13
IC601	G-5
Q110	B-12
Q111	B-12
Q112	B-10
Q115	B-12
Q140	E-11
Q147	C-10
Q148	C-10
Q150	C-12
Q210	C-7
Q250	D-11
Q251	E-11
Q255	D-11
Q265	E-11
Q311	C-7
Q312	C-7
Q315	C-5
Q319	B-5
Q603	G-6
Q801	F-15

Note:

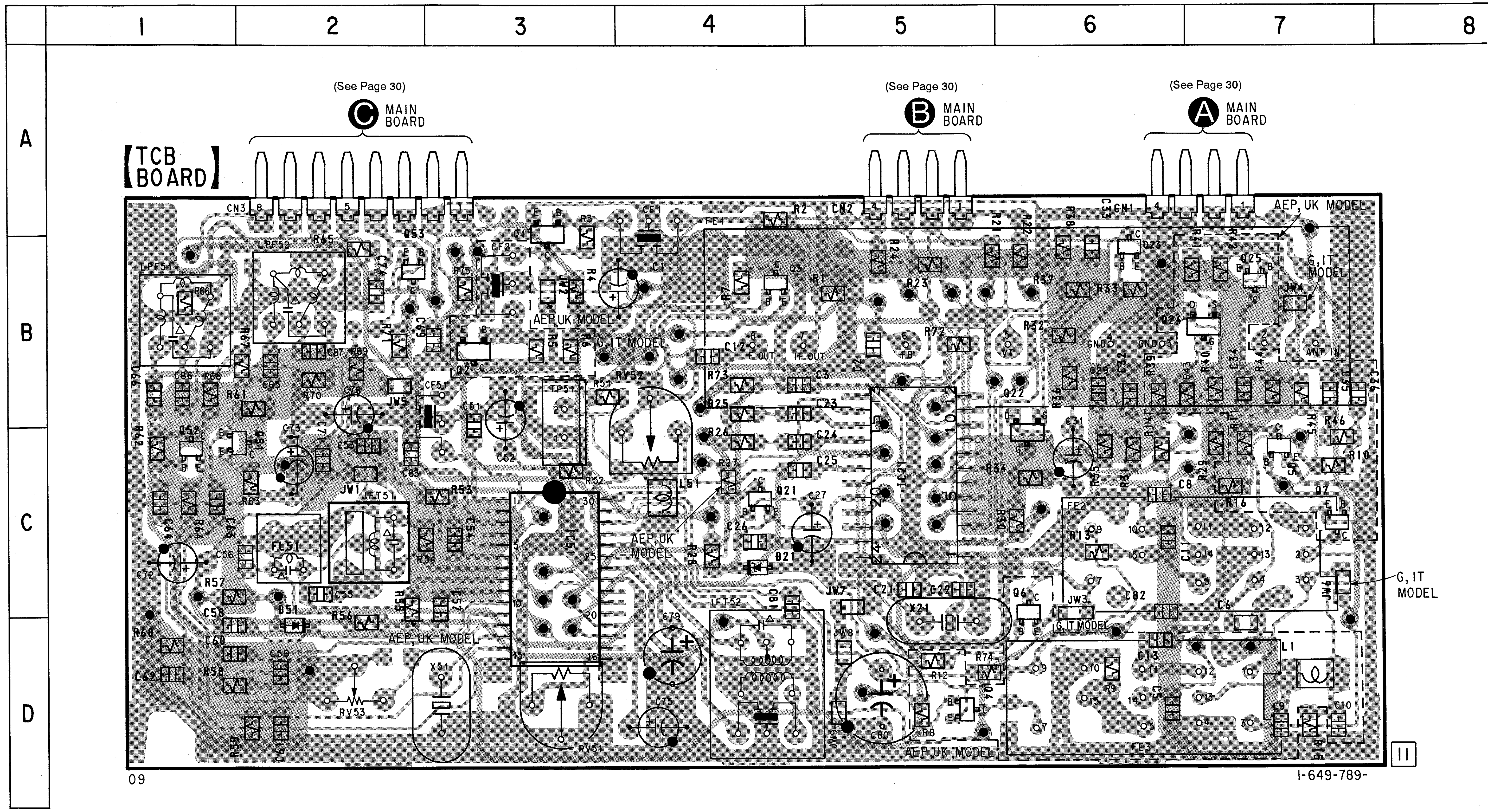
- o—— : parts extracted from the component side.
- ● : Through hole.
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.
- IT : Italian model.

4-8. PRINTED WIRING BOARD — TUNER SECTION —

- See page 9 for Circuit Boards Location.
- See page 10 for Semiconductor Lead Layouts.

- **Semiconductor Location**

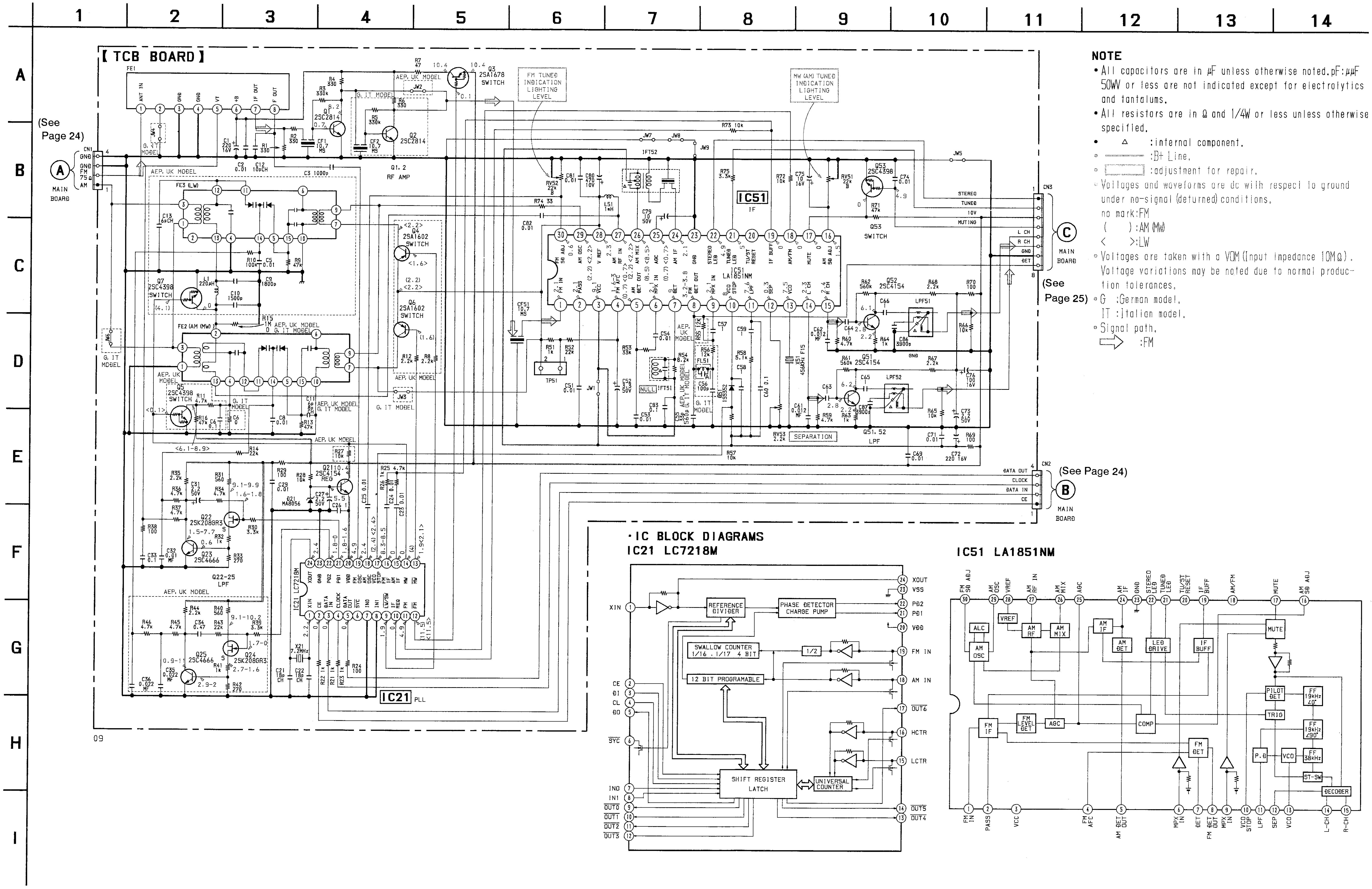
Ref. No.	Location
D21	C-4
D51	C-2
IC21	C-5
IC51	C-3
Q1	A-3
Q2	B-3
Q3	B-4
Q4	D-5
Q5	C-7
Q6	C-6
Q7	C-7
Q21	C-4
Q22	B-6
Q23	B-6
Q24	B-6
Q25	B-7
Q51	C-2
Q52	C-1
Q53	B-2


1
2
3
4
5
6
7
8
A
B
C
D
(See Page 30)
C MAIN BOARD
(See Page 30)
B MAIN BOARD
(See Page 30)
A MAIN BOARD
TCB BOARD
CN3
CN2
CN1
AEP, UK MODEL
G, IT MODEL
AEP, UK MODEL
G, IT MODEL
AEP, UK MODEL
AEP, UK MODEL
AEP, UK MODEL
G, IT MODEL
G, IT MODEL
AEP, UK MODEL
LPF51
LPF52
FL51
IFT51
IFT52
IC51
IC21
TP51
RV51
RV52
RV53
X51
X21
FE1
FE2
FE3
CF1
CF2
CF51
L1
L51
JW1
JW3
JW4
JW5
JW7
JW8
F OUT
IF OUT
+B
VT
GND
GND
ANT IN
09
1-649-789-
11

Note:

- o—— : parts extracted from the component side.
- ● : Through hole.
- △ : internal component.
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.
- G : German model.
- IT : Italian model.

4-9. SCHEMATIC DIAGRAM — TUNER SECTION —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
【TCB BOARD】
FE1
(See Page 24)
A
MAIN BOARD
CN1
GND
GND
FM 75Ω
AM
Q1, 2 RF AMP
2SC2814
Q3 2SA1678 SWITCH
FM TUNED INDICATION LIGHTING LEVEL
MW (AM) TUNED INDICATION LIGHTING LEVEL
AEP, UK MODEL
G, IT MODEL
IC51 IF
IC51 LA1851NM
Q53 2SC4398 SWITCH
Q4 2SA1602 SWITCH
Q6 2SA1602 SWITCH
Q7 2SC4398 SWITCH
Q5 2SC4398 SWITCH
FE3 (LW)
FE2 (AM (MW))
IFT52
IFT51
FL51
CF51 10.7 MS
TP51
NULL
SEPARATION
Q51, 52 LPF
LPF51
LPF52
X51 456kHz
STEREO
TUNED
10V
MUTING
L CH
R CH
GND
DET
CN3
C
MAIN BOARD
(See Page 25)
CN2
DATA OUT
CLOCK
DATA IN
CE
(See Page 24)
B
MAIN BOARD
Q21 2SC4154 REG
D21 MA8056
Q22 2SK208GR3
Q23 2SC4666
Q22-25 LPF
Q24 2SK208GR3
Q25 2SC4666
X21 7.2MHz
IC21 LC7218M
IC21 PLL
09

NOTE

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ :internal component.
- ▭ :B+ Line.
- ▭ :adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark:FM
  ( ) :AM (MW)
  < >:LW
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- G :German model.
  IT :Italian model.
- Signal path.
  ⇨ :FM

·IC BLOCK DIAGRAMS

IC21 LC7218M

XIN
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
SWALLOW COUNTER 1/16 . 1/17 4 BIT
1/2
12 BIT PROGRAMABLE
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
CE
DI
CL
DO
SYC
IN0
IN1
OUT0
OUT1
OUT2
OUT3
XOUT
VSS
PD2
PD1
VDD
FM IN
AM IN
OUT6
HCTR
LCTR
OUT5
OUT4

IC51 LA1851NM

FM SD ADJ
AM OSC
VREF
AM RF IN
AM MIX
AGC
AM IF
GND
STEREO LED
TUNED LED
TU/ST RESET
IF BUFF
AM/FM
MUTE
AM SD ADJ
ALC
AM OSC
VREF
AM RF
AM MIX
AM IF
AM DET
LED DRIVE
IF BUFF
MUTE
PILOT DET
FF 19kHz ∠0°
TRIG
FF 19kHz ∠90°
P.D
VCO
FF 38kHz
ST-SW
DECODER
FM IF
FM LEVEL DET
AGC
COMP
FM DET
FM IN
PASS
VCC
FM AFC
AM DET OUT
MPX IN
DET
FM DET OUT
MPX IN
VCO STOP
LPF
SEP
VCO
L-CH
R-CH

4-10. IC PIN FUNCTIONS

- **IC101 Digital Signal Processor, CLV Servo (CXD2515Q)**

Pin No.	Pin Name	I/O	Function
1	SRON	O	Sled drive output
2	SRDR	O	Sled drive output
3	SFON	O	Sled drive output
4	TFDR	O	Tracking drive output
5	TRON	O	Tracking drive output
6	TRDR	O	Tracking drive output
7	TFON	O	Tracking drive output
8	FFDR	O	Focus drive output
9	FRON	O	Focus drive output
10	FRDR	O	Focus drive output
11	FFON	O	Focus drive output
12	VCOO	O	VCO output for analog EFM PLL
13	VCOI	I	VCO output for analog EFM PLL
14	TEST	I	TEST pin connected normally to GND
15	DVss	–	Digital GND
16	TES2	I	TEST pin connected normally to GND
17	TES3	I	TEST pin connected normally to GND
18	PDO	O	Charge-pump output for analog EFM PLL
19	VPCO	O	Charge-pump output for variable pitch PLL
20	VCKI	I	Clock input from variable pitch external VCO
21	AVD2	–	Analog power supply
22	IGEN	I	Power supply pin for operational amplifiers
23	AVS2	–	Analog GND
24	ADII	I	Input pin for A/D converter
25	ADIO	O	Operational amplifier output pin
26	RFDC	I	RF signal input
27	TE	I	Tracking error signal input
28	SE	I	Sled error signal input
29	FE	I	Focus error signal input
30	VC	I	Center voltage input pin
31	FILO	O	Filter output for master PLL
32	FILI	I	Filter input for master PLL
33	PCO	O	Charge-pump output for master PLL
34	CLTV	I	Control voltage input for master VCO
35	AVS1	–	Analog GND
36	RFAC	I	EFM signal input
37	BIAS	I	Asymmetry circuit constant current input
38	ASYI	I	Asymmetry comparate voltage input
39	ASYO	O	EFM full swing output
40	AVD1	–	Analog power supply

Pin No.	Pin Name	I/O	Function
41	DVDD	–	Digital power supply
42	ASYE	I	Asymmetry circuit ON/OFF
43	PSSL	I	Audio data output mode selection input
44	WDCK	O	48-bit slot D/A interface. Word clock
45	LRCK	O	48-bit slot D/A interface. LR clock
46	DATA	O	DA 16 output when PSSL=1. 48-bit slot serial data when PSSL=0
47	BCLK	O	DA 15 output when PSSL=1. 48-bit slot data when PSSL=0
48	64DATA	O	DA 14 output when PSSL=1. 64-bit slot data when PSSL=0
49	64BCLK	O	DA 13 output when PSSL=1. 64-bit slot data when PSSL=0
50	64LRCK	O	DA 12 output when PSSL=1. 64-bit slot data when PSSL=0
51	GTOP	O	DA 11 output when PSSL=1. GTOP output when PSSL=0
52	XUGF	O	DA 10 output when PSSL=1. XUGF output when PSSL=0
53	XPLCK	O	DA 09 output when PSSL=1. XPLCK output when PSSL=0
54	GFS	O	DA 08 output when PSSL=1. GFS output when PSSL=0
55	PFCK	O	DA 07 output when PSSL=1. RFCK output when PSSL=0
56	C2PO	O	DA 06 output when PSSL=1. C2PO output when PSSL=0
57	XRAOF	O	DA 05 output when PSSL=1. XRA0F output when PSSL=0
58	MNT3	O	DA 04 output when PSSL=1. MNT3 output when PSSL=0
59	MNT2	O	DA 03 output when PSSL=1. MNT2 output when PSSL=0
60	MNT1	O	DA 02 output when PSSL=1. MNT1 output when PSSL=0
61	MNT0	O	DA 01 output when PSSL=1. MNT0 output when PSSL=0
62	XTAI	I	X'tal oscillator circuit input
63	XTAO	O	X'tal oscillator circuit output
64	XTSL	I	X'tal selection input pin
65	DVss	–	Digital GND
66	FSTI	I	2/3 divider output of pins 62, 63
67	FSTO	O	2/3 divider output of pins 62, 63
68	C4M	O	4.2336 MHz output
69	C16M	O	16.9344 MHz output
70	MD2	I	Digital-out ON/OFF control pin
71	DOUT	O	Digital-out output pin
72	EMPH	O	Playback disc output in emphasis mode
73	WFCK	O	WFCK output
74	SCOR	O	Sub-code sync output
75	SBSO	O	Sub-P through Sub-W serial output
76	EXCK	I	Clock input for SBS0 read-out
77	SUBQ	O	Sub-Q 80-bit output
78	SQCK	I	Clock input for SQS0 read-out
79	MUTE	I	Muting selection pin
80	SENS	O	SENS output
81	XRST	I	System reset
82	DIRC	I	Used in 1-track jump mode
83	SCLK	I	SENS serial data read-out clock
84	DFSW	I	DFCT selection pin
85	ATSK	I	Input pin for anti-shock

Pin No.	Pin Name	I/O	Function
86	DATA	I	Serial data input, supplied from CPU
87	XLAT	I	Latch input, supplied from CPU
88	CLOK	I	Serial data transfer clock input, supplied from CPU
89	COUT	O	Numbers of track counted signal output
90	DVDD	–	Digital power supply
91	MIRR	O	Mirror signal output
92	DFCT	O	Defect signal output
93	FOK	O	Focus OK output
94	FSW	O	Output to select spindle motor output filter
95	MON	O	Output to control ON/OFF of spindle motor
96	MDP	O	Output to control spindle motor servo
97	MDS	O	Output to control spindle motor servo
98	LOCK	O	GFS is sampled by 460 Hz. H when GFS is H
99	SSTP	I	Input signal to detect disc inner most track
100	SFDR	O	Sled drive output

- **IC103 Digital Filter, D/A Converter (CXD2565AM)**

Pin No.	Pin Name	I/O	Function
1	INIT	I	Re-synchronizing at rise-up edge of this signal
2	SYSM	–	System muting input
3	ATT	I	Attenuation data input
4	SHIFT	I	Shift clock input
5	LATCH	I	Latch clock input
6	384FSO	O	384fs clock output
7	TEST1	–	Test pin. Fixed to "L" level during normal operation
8	DVss	–	Digital GND
9	TEST2	–	Test pin. Fixed to "L" level during normal operation
10	BCK	I	BCK input
11	DATA	I	Data input
12	LRCK	I	LRCK input
13	MUTEL	O	L-CH mute flag
14	MUTER	O	R-CH mute flag
15	DVDD1	–	Digital power supply
16	R1 (+)	O	R-ch PLM output-1 (positive phase)
17	AVDDR	–	L-ch analog power supply
18	R2 (+)	O	R-ch PLM output-2 (positive phase)
19	AVssR	–	L-ch analog GND
20	XVDD	–	Master clock power supply
21	XOUT	O	X'tal oscillator output (33.8 MHz)
22	XIN	I	X'tal oscillator input (33.8 MHz)
23	XVss	–	Master clock GND
24	AVssL	–	L-ch analog GND
25	L2 (+)	O	L-ch PLM output-2 (positive phase)
26	AVDDL	–	L-ch analog power supply
27	L1 (+)	O	L-ch PLM output-1 (positive phase)
28	DVDD2	–	Digital power supply

• IC201 CD System Controller (TMP87CH47U-4103)

Pin No.	Pin Name	I/O	Function
1	SQCLK	O	Sub-code Q data read clock output to IC101 (CXD2515Q).
2	PRGL	O	Latch output to IC103 (digital filter).
3	XLT	O	Serial data latch output to IC101 (CXD2515Q).
4	SCOR	I	Sub-code sync S0+S1 detection input from IC101 (CXD2515Q).
5	NC	–	Not used.
6	ICSW	I/O	CD power supply control flag. OFF: 0 output ON: Input (High impedance condition)
7	AMUTE	O	Muting control output. "High": Mute
8	SCLK	I	SENS serial data read-out clock.
9	LDON	O	Optical pickup laser diode on/off selection output. "High": ON
10	ASW	O	Analog bus control signal output to IC501 (TC9215F).
11	NC	–	Not used.
12	SENSE	I	SENSE input from IC101 (CXD2515Q).
13	TEST	I	Fixed at "L".
14	RESET	I	System reset input.
15	XIN	I	External clock input (8.0 MHz).
16	XOUT	O	External clock output (8.0 MHz).
17	Vss	–	GND pin.
18	VAREF	I	Reference voltage +5V for A/D convertor.
19	KEY0	–	NC
20	KEY1	–	
21	KEY2	–	
22	DPCLK	O	Display data transmission clock output to IC301 (μPD78013GC-593-AB8).
23	DPDAT0	I/O	Key data input and display data output with IC301 (μPD78013GC-593-AB8).
24	DPDAT1	I/O	
25	DPDAT2	I/O	
26	DPDAT3	I/O	
27	NC	–	Not used.
28	NC	–	
29	NC	–	
30	KEYREQ	I	Key code input trigger from IC301 (μPD78013GC-593-AB8). (Four falling edges for each key)
31	AUD BUS IN	I	Audio bus input.
32	AUD BUS OUT	O	Audio bus output pin.
33	LODOUT	O	Output rotating M151 (loading motor) in loading-out direction. *1
34	LODIN	O	Output rotating M151 (loading motor) in loading-in direction. *1
35	OUTSW	I	S151 (loading-out switch) input.
36	INSW	I	S152 (loading-in switch) input.
37	AFUNC	I	Auto function input.
38	ADJ	I	CD test mode input 1. Continues rotating the spindle motor even if the GFS check is not performed or no frame sync is output in PLAY, PAUSE, SEARCH at "Low".
39	AFADJ	I	CD test mode input 2.
40	VDD	–	Power supply pin (+5V).
41	DATA	O	Serial data output to IC101 (CXD2515Q), IC103 (CXD2565AM).
42	CLK	O	Serial data transmission clock output to IC101 (CXD2515Q), IC103 (CXD2565AM).
43	NC	–	Not used.
44	SUBQ	I	Sub-code Q data input from IC101 (CXD2515Q).

*1 Loading motor control

	IN	OUT	BRAKE
LOG OUT ⑥	L	H	H
LOG IN ⑤	H	L	H

• IC301 Tuner System Controller (μPD78013GC-593-AB8)

Pin No.	Pin Name	I/O	Function
1	D0	I/O	Data input/output terminal with IC201 (CD system controller).
2	D1	I/O	
3	D2	I/O	
4	D3	I/O	
5	KEY REQ (CD)	O	Key data output timing. (CD)
6	CD BUSY NPUT	I	CD condition input.
7	RDS RESET	O	Reset output to IC306 (RDS error correction).
8	NC	–	Not used in this unit (Open).
9	Vss	–	GND pin.
10	Destination	I	Destination determination input.
11	Destination	I	
12	Destination	I	
13	IF+50K	I	IF OFFSET +50 kHz.
14	IF–50K	I	IF OFFSET –50 kHz.
15	BACK UP	I	Detection of power failure.
16	RDS ID	I	Not used in this unit (Open).
17		–	
18	STEREO	I	STEREO input.
19	SIGNAL	I	SIGNAL input.
20	DATA INPUT	I	Data input from IC21 (PLL).
21	DATA OUTPUT	O	Data output to IC21 (PLL).
22	CLOCK	O	CLOCK output to IC21 (PLL).
23	CE	O	CE output to IC21 (PLL).
24	Vss	–	GND pin.
25	IF OK	–	Not used in this unit (Open).
26	FM/AM (J)	–	
27	AM MONO (J)	–	
28	NC	–	
29	Analog bus control	O	Analog bus control output of IC501 (Analog switch).
30	POWER	O	Power output to tuner. “Low”: ON “High”: OFF
31	MUTE	O	Muting output to tuner. “Low”: ON “High”: OFF
32	CLOCK X24C	–	Not used in this unit (Open).
33	DATA X24C	–	
34	AU BUS OUT	O	Audio bus output.
35	RESET	I	Reset input.
36	AU BUS IN	I	Audio bus input.
37	RDS START	I	RDS error correction data timing input.
38	DPCLK (CD)	I	CD display data timing input from IC201 (CD system controller).
39	DPSYNC	–	Not used in this unit (Open).
40	VDD	–	Power supply pin (+5V).

Pin No.	Pin Name	I/O	Function
41	X2	O	Main clock.
42	X1	I	Main clock (10 MHz).
43	GND	–	GND pin.
44	XT2	–	Not used in this unit (Open).
45	GND	–	GND pin.
46	GND	–	
47	Key input	I	Key input.
48	Key input	I	
49	Key input	I	
50	GND	I	GND pin.
51	GND	–	
52	GND	–	
53	GND	–	
54	GND	–	
55	AVDD	–	Power supply pin (+5V).
56	AVREF	–	
57	GND	–	GND pin.
58	SDATA	O	Data output to IC601 (FL driver).
59	SCK	O	CLOCK output to IC601 (FL driver).
60	CS	O	CS output to IC601 (FL driver).
61	RESET	O	Reset output to IC601 (FL driver).
62	RDS DATA	I	Data input from IC306 (RDS error correction).
63	NC	–	Not used in this unit (Open).
64	RDS CLK	I	Clock input from IC306 (RDS error correction).

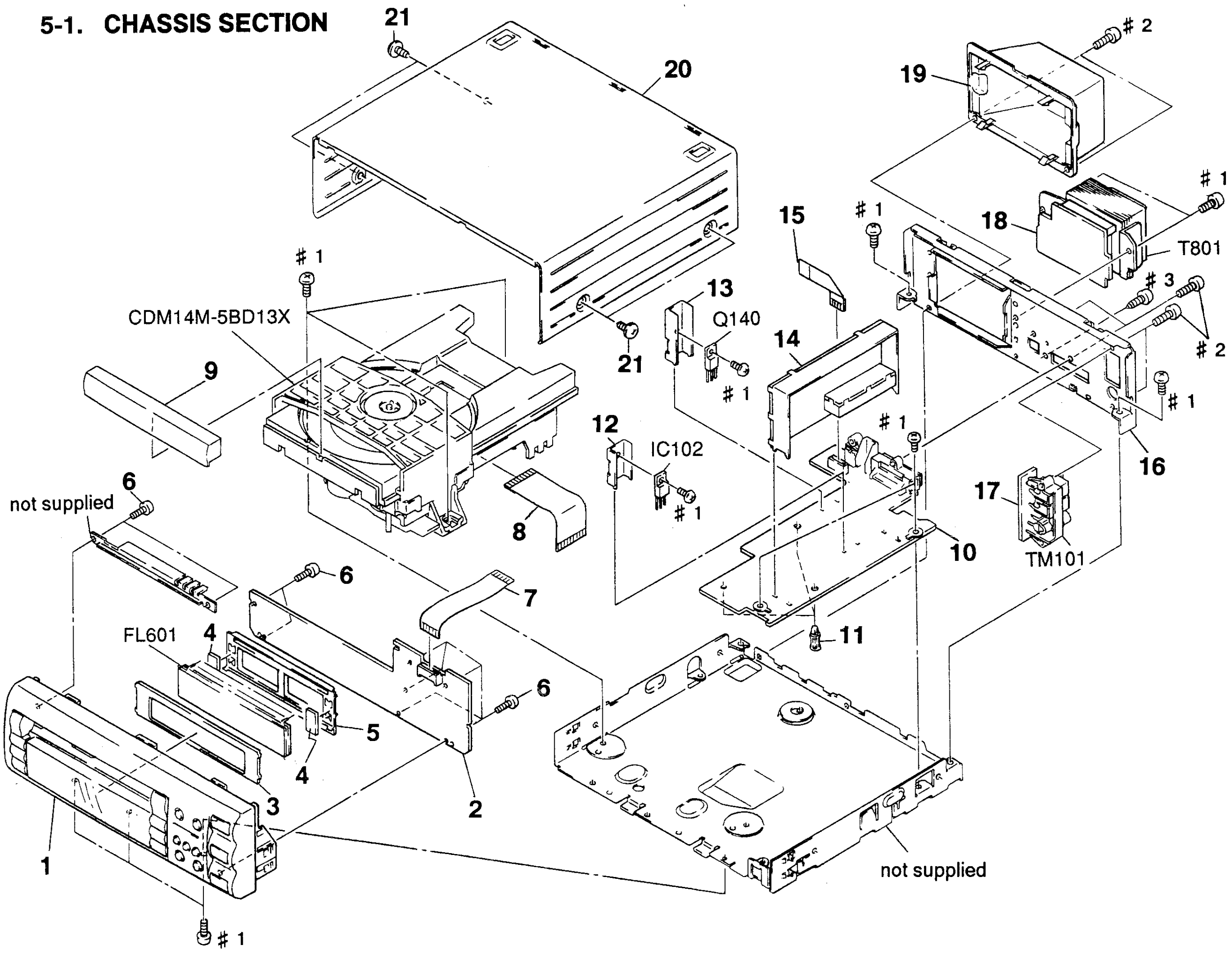
SECTION 5
EXPLODED VIEWS

NOTE:
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts color Cabinet's color
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

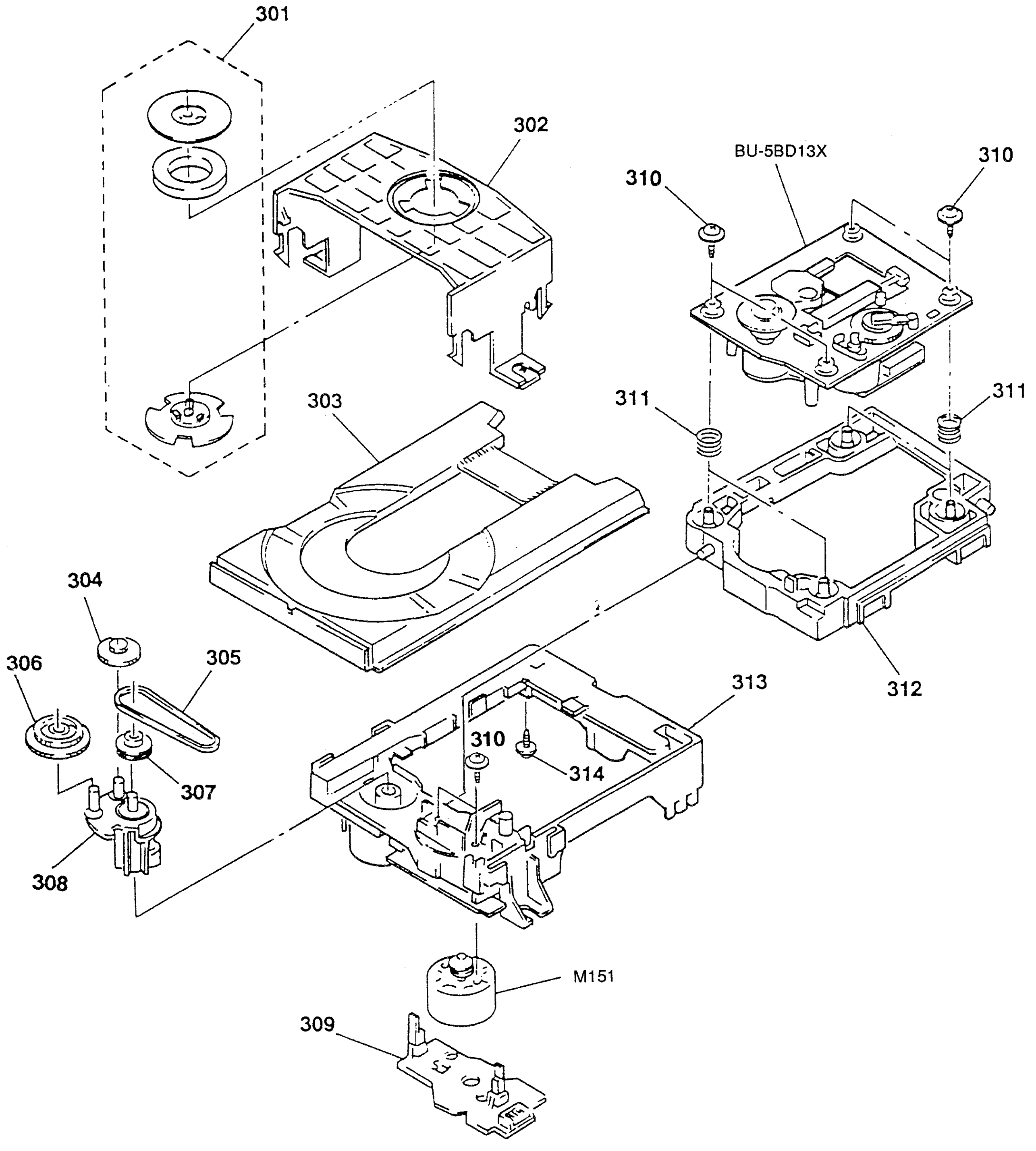
- G : German model
- IT : Italian model

5-1. CHASSIS SECTION



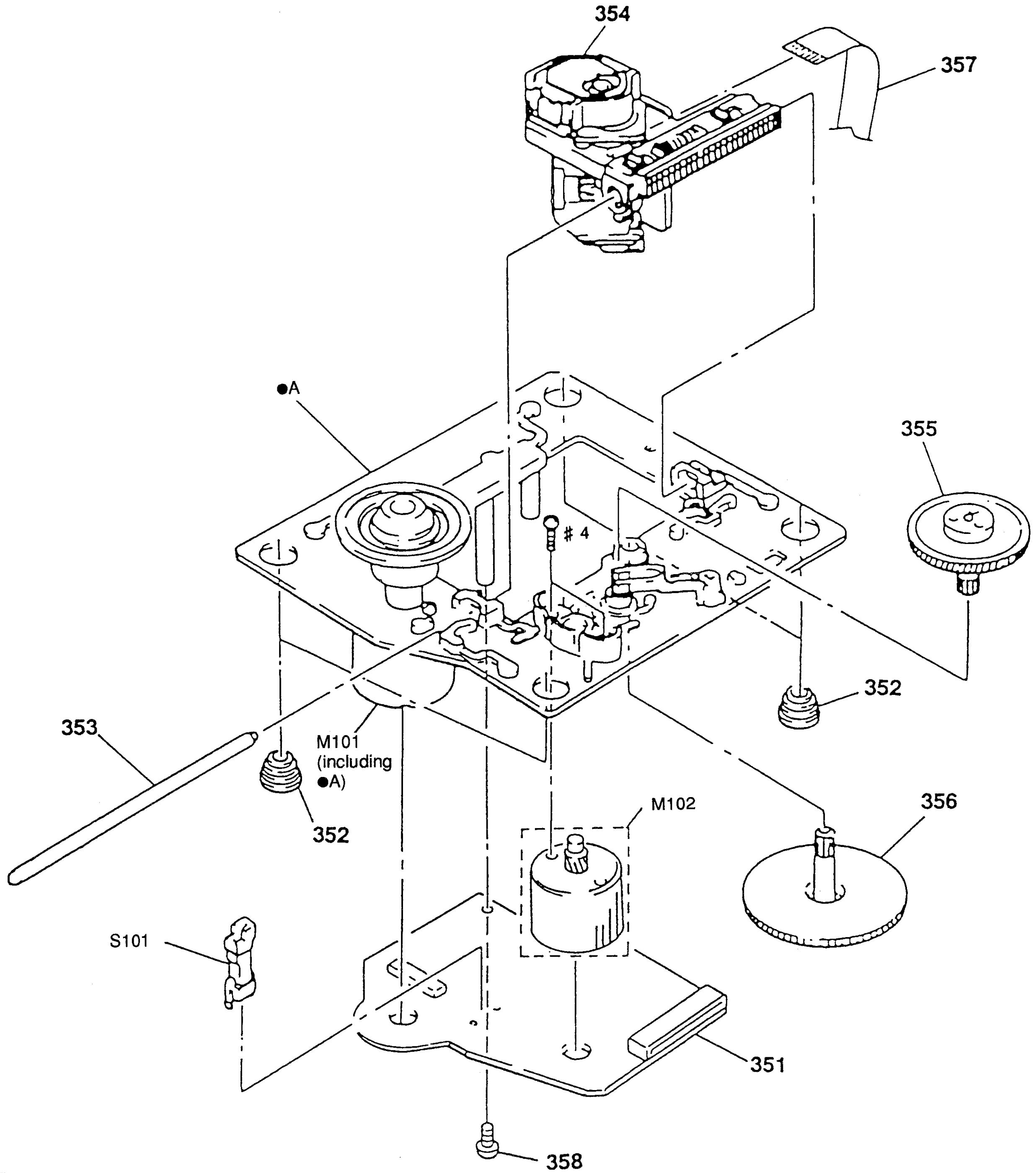
Ref. No.	Part No.	Description	Remark
1	X-4944-595-1	PANEL ASSY, FRONT	
* 2	A-4365-769-A	PANEL BOARD, COMPLETE	
3	4-961-884-01	PLATE, BLIND	
* 4	4-932-810-11	CUSHION (FL)	
* 5	4-954-187-11	HOLDER (FL)	
6	4-951-620-01	SCREW (2.6X8), +BVTP	
7	1-751-981-11	WIRE (FLAT TYPE) (13 CORE)	
8	1-765-175-11	WIRE (FLAT TYPE) (26 CORE)	
9	4-961-885-01	PANEL (LOADING)	
* 10	A-4365-768-A	MAIN BOARD, COMPLETE (G)	
* 10	A-4369-509-A	MAIN BOARD, COMPLETE (AEP)	
* 10	A-4369-510-A	MAIN BOARD, COMPLETE (IT)	
* 10	A-4369-511-A	MAIN BOARD, COMPLETE (UK)	
* 11	3-669-610-00	SPACER	
* 12	3-309-144-21	HEATSINK	
* 13	4-941-237-01	HEATSINK (AEP, UK, G)	
* 13	4-941-237-11	HEATSINK (IT)	
14	A-4303-459-A	TBC BOARD, COMPLETE (AEP, UK)	
14	A-4303-460-A	TBC BOARD, COMPLETE (G, IT)	
15	1-751-980-11	WIRE (FLAT TYPE) (9 CORE)	
* 16	4-961-887-11	PANEL (HCD), BACK (AEP)	
* 16	4-961-887-21	PANEL (HCD), BACK (G)	
* 16	4-961-887-31	PANEL (HCD), BACK (IT)	
* 16	4-961-887-41	PANEL (HCD), BACK (UK)	
* 17	1-649-897-11	ANT BOARD	
* 18	1-649-896-11	TRANS BOARD	
* 19	4-961-886-11	COVER (TRANSFORMER)	
20	4-961-481-41	CASE	
21	3-363-099-21	SCREW (CASE 3 TP2)	
FL601	1-517-241-11	INDICATOR TUBE, FLUORESCENT	
⚠T801	1-426-704-11	TRANSFORMER, POWER	
* TM101	1-537-288-11	TERMINAL BOARD, ANTENNA (PAL)	

5-2. CD MECHANISM SECTION (CDM14M-5BD13X)


301
302
BU-5BD13X
310
310
303
311
311
304
306
305
313
312
310
314
307
308
M151
309

Ref. No.	Part No.	Description	Remark
* 301	1-452-538-11	MAGNET	
302	4-933-110-01	HOLDER (MG)	
303	4-961-487-01	TABLE, DISK	
304	4-927-628-01	GEAR (C)	
305	4-927-649-01	BELT	
306	4-933-107-01	GEAR (PL)	
307	4-927-651-01	PULLEY (S)	
308	4-933-109-01	CAM	
* 309	1-645-721-11	LOADING BOARD	
310	4-933-134-01	SCREW (+PTPWH M2.6X6)	
311	4-959-996-01	SPRING (932), COMPRESSION	
312	4-933-129-01	HOLDER (BU)	
313	4-933-111-01	CHASSIS (MD)	
* 314	4-917-583-21	BRACKET, YOKE	
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)	

5-3. BASE UNIT SECTION (BU-5BD13X)


354
357
●A
355
# 4
352
353
M101
(including
●A)
352
M102
356
S101
351
358

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 351	A-4673-034-A	BD BOARD, COMPLETE	
352	4-951-940-01	INSULATOR (BU)	
353	4-917-565-01	SHAFT, SLED	
⚠354	8-848-144-11	OPTICAL PICK-UP BLOCK (KSS-240A)	
355	4-917-567-01	GEAR (M)	
356	4-917-564-01	GEAR (P), FLATNESS	
357	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
358	4-951-620-01	SCREW (2.6X8), +BVTP	
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ Parts color ↑ Cabinet's color
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- G : German model
  IT : Italian model

Ref. No.	Part No.	Description			Remark
*	1-649-897-11	ANT BOARD *********			
		< TERMINAL >			
* TM101	1-537-288-11	TERMINAL BOARD, ANTENNA (PAL)			

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Ref. No.	Part No.	Description			Remark
*	A-4673-034-A	BD BOARD, COMPLETE ******************			
		< CAPACITOR >			
C101	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C102	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C103	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C105	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C106	1-164-346-11	CERAMIC CHIP	1uF		16V
C107	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C108	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C109	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C110	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C111	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C112	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C113	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C123	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C124	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C131	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C132	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C133	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C153	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C159	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C161	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C177	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C178	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C179	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C181	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C182	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C183	1-135-156-21	TANTALUM CHIP	6.8uF	10%	10V
C184	1-135-156-21	TANTALUM CHIP	6.8uF	10%	10V
C185	1-135-156-21	TANTALUM CHIP	6.8uF	10%	10V
C186	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C187	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C188	1-163-038-00	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C191	1-163-091-00	CERAMIC CHIP	8PF		50V
C192	1-163-091-00	CERAMIC CHIP	8PF		50V
C193	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C194	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C195	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C196	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C197	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
* CN101	1-580-875-11	SOCKET, CONNECTOR (SMT) 26P			
CN102	1-580-866-11	SOCKET, CONNECTOR (SMT) 12P			
		< IC >			
IC101	8-752-361-90	IC	CXD2515Q		
IC102	8-759-176-09	IC	BA6392FP		
IC103	8-752-367-61	IC	CXD2565AM		
		< COIL >			
L101	1-414-234-11	INDUCTOR, FERRITE BEAD			
L102	1-414-234-11	INDUCTOR, FERRITE BEAD			
L103	1-414-234-11	INDUCTOR, FERRITE BEAD			
L104	1-216-001-00	METAL CHIP	10	5%	1/10W
L105	1-216-295-00	METAL CHIP	0	5%	1/10W
L106	1-414-234-11	INDUCTOR, FERRITE BEAD			
L107	1-216-295-00	METAL CHIP	0	5%	1/10W
L108	1-216-295-00	METAL CHIP	0	5%	1/10W
		< RESISTOR >			
R101	1-216-077-00	METAL CHIP	15K	5%	1/10W
R102	1-216-097-00	METAL CHIP	100K	5%	1/10W
R103	1-216-077-00	METAL CHIP	15K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R106	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R107	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R108	1-216-073-00	METAL CHIP	10K	5%	1/10W
R109	1-216-121-00	METAL CHIP	1M	5%	1/10W
R110	1-216-025-00	METAL CHIP	100	5%	1/10W
R112	1-216-049-00	METAL CHIP	1K	5%	1/10W
R122	1-216-295-00	METAL CHIP	0	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R124	1-216-097-00	METAL CHIP	100K	5%	1/10W
R125	1-216-049-00	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description	Remark
R126	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R127	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R131	1-216-037-00	METAL CHIP 330 5% 1/10W	
R158	1-216-111-00	METAL CHIP 390K 5% 1/10W	
R159	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R181	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R182	1-216-080-00	METAL CHIP 20K 5% 1/10W	
R183	1-216-080-00	METAL CHIP 20K 5% 1/10W	
R184	1-216-080-00	METAL CHIP 20K 5% 1/10W	
R185	1-216-080-00	METAL CHIP 20K 5% 1/10W	
R187	1-216-041-00	METAL CHIP 470 5% 1/10W	
R188	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R189	1-414-234-11	INDUCTOR, FERRITE BEAD	
		< SWITCH >	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	
		< VIBRATOR >	
X101	1-579-904-41	VIBRATOR, CRYSTAL (33.8MHz)	

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Ref. No.	Part No.	Description	Remark
*	1-645-721-11	LOADING BOARD *************	
		< CONNECTOR >	
* CN151	1-568-943-11	PIN, CONNECTOR 5P	
		< MOTOR >	
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)	
		< SWITCH >	
S151	1-572-086-11	SWITCH, LEAF (LOAD OUT)	
S152	1-572-086-11	SWITCH, LEAF (LOAD IN)	

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Ref. No.	Part No.	Description	Remark
*	A-4365-768-A	MAIN BOARD, COMPLETE (G) ************************	
*	A-4369-509-A	MAIN BOARD, COMPLETE (AEP) **************************	
*	A-4369-510-A	MAIN BOARD, COMPLETE (IT) *************************	
*	A-4369-511-A	MAIN BOARD, COMPLETE (UK) *************************	
*	3-309-144-21	HEAT SINK	
*	4-941-237-11	HEAT SINK (IT)	
*	4-941-237-01	HEAT SINK (AEP, UK, G)	
	7-682-547-09	SCREW +BVTT 3X6 (S)	

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C101	1-128-548-11	ELECT 4700uF 20% 25V	
C105	1-124-477-11	ELECT 47uF 20% 25V	
C112	1-124-477-11	ELECT 47uF 20% 25V	
C113	1-126-101-11	ELECT 100uF 20% 16V	
C114	1-126-101-11	ELECT 100uF 20% 16V	
C115	1-126-101-11	ELECT 100uF 20% 16V	
C116	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C120	1-126-101-11	ELECT 100uF 20% 16V	
C121	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C130	1-124-480-11	ELECT 470uF 20% 25V	
C131	1-164-346-11	CERAMIC CHIP 1uF 16V	
C132	1-126-176-11	ELECT 220uF 20% 10V	
C133	1-164-346-11	CERAMIC CHIP 1uF 16V	
C134	1-164-346-11	CERAMIC CHIP 1uF 16V	
C140	1-124-472-11	ELECT 470uF 20% 10V	
C141	1-164-346-11	CERAMIC CHIP 1uF 16V	
C142	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C143	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C145	1-124-927-11	ELECT 4.7uF 20% 100V	
C150	1-124-472-11	ELECT 470uF 20% 10V	
C172	1-125-507-11	CAP, DOUBLE LAYERS 0.22F	
C201	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C206	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C207	1-136-177-00	FILM 1uF 5% 50V	
C210	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C230	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C231	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C235	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C240	1-124-907-11	ELECT 10uF 20% 50V	
C241	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C250	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C251	1-163-001-11	CERAMIC CHIP 200PF 5% 50V	
C254	1-163-001-11	CERAMIC CHIP 200PF 5% 50V	
C255	1-124-126-00	ELECT 47uF 20% 10V	
C256	1-164-161-11	CERAMIC CHIP 2200PF 10% 50V	
C260	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C261	1-163-001-11	CERAMIC CHIP 200PF 5% 50V	
C264	1-163-001-11	CERAMIC CHIP 200PF 5% 50V	
C265	1-124-126-00	ELECT 47uF 20% 10V	
C266	1-164-161-11	CERAMIC CHIP 2200PF 10% 50V	
C311	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C312	1-124-903-11	ELECT 1uF 20% 50V	
C313	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C315	1-136-177-00	FILM 1uF 5% 50V	
C316	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C317	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C318	1-126-101-11	ELECT 100uF 20% 16V	
C321	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C340	1-124-925-11	ELECT 2.2uF 20% 100V	

MAIN

Ref. No.	Part No.	Description				Remark
C341	1-163-003-11	CERAMIC CHIP	330PF	10%	50V	
C342	1-163-006-11	CERAMIC CHIP	560PF	10%	50V	
C343	1-136-177-00	FILM	1uF	5%	50V	
C344	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C345	1-163-243-11	CERAMIC CHIP	47PF	5%	50V	
C346	1-163-249-11	CERAMIC CHIP	82PF	5%	50V	
C350	1-124-126-00	ELECT	47uF	20%	10V	
C351	1-164-346-11	CERAMIC CHIP	1uF		16V	
C352	1-126-101-11	ELECT	100uF	20%	16V	
C353	1-124-903-11	ELECT	1uF	20%	50V	
C354	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C360	1-124-907-11	ELECT	10uF	20%	50V	
C361	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C362	1-136-177-00	FILM	1uF	5%	50V	
C363	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C364	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C501	1-126-101-11	ELECT	100uF	20%	16V	
C504	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C505	1-165-319-11	CERAMIC CHIP	0.1uF		50V	

< CONNECTOR >

* CN101	1-569-624-11	SOCKET, CONNECTOR 17P	
* CN103	1-568-832-11	SOCKET, CONNECTOR 13P	
* CN108	1-568-828-11	SOCKET, CONNECTOR 9P	
* CN205	1-568-954-11	PIN, CONNECTOR 5P	

< DIODE >

D101	8-719-200-02	DIODE	10E2
D102	8-719-200-02	DIODE	10E2
D105	8-719-200-02	DIODE	10E2
D106	8-719-200-02	DIODE	10E2
D110	8-719-022-03	DIODE	UZM11Z
D111	8-719-990-39	DIODE	DCB010
D135	8-719-990-39	DIODE	DCB010
D160	8-719-021-88	DIODE	UZM10B
D172	8-719-990-39	DIODE	DCB010
D210	8-719-990-39	DIODE	DCB010
D311	8-719-990-39	DIODE	DCB010
D315	8-719-990-39	DIODE	DCB010

< GROUND PLATE >

* EB2	4-870-539-00	PLATE, GROUND
* EB3	4-870-539-00	PLATE, GROUND

< IC >

IC102	8-759-605-00	IC	M5F78M07L
IC103	8-759-820-13	IC	L78MR06
IC104	8-759-636-24	IC	M5290FP
IC201	8-759-283-48	IC	TMP87CH47U-4103
IC203	8-759-040-83	IC	BA6287F

Ref. No.	Part No.	Description				Remark
IC204	8-749-923-04	IC	TOTX178			
IC205	8-759-100-96	IC	UPC4558G2			
IC301	8-759-262-31	IC	uPD78013GC-593-AB8			
IC304	8-759-065-98	IC	SAA6579T			
IC305	8-759-100-96	IC	UPC4558G2			
IC306	8-759-161-78	IC	LC7073M			
IC501	8-759-051-64	IC	TC9215F			

< JUMPER RESISTOR >

JW301	1-216-295-00	METAL CHIP	0	5%	1/10W	
JW302	1-216-295-00	METAL CHIP	0	5%	1/10W	(IT)
JW303	1-216-295-00	METAL CHIP	0	5%	1/10W	(AEP, UK)
JW306	1-216-295-00	METAL CHIP	0	5%	1/10W	
JW307	1-216-295-00	METAL CHIP	0	5%	1/10W	

< COIL >

L201	1-410-381-11	INDUCTOR CHIP	10uH
L204	1-410-464-11	INDUCTOR	3.3uH
L250	1-410-397-21	FERRITE BEAD INDUCTOR	
L301	1-410-393-11	INDUCTOR CHIP	100uH

< TRANSISTOR >

Q110	8-729-232-69	TRANSISTOR	2SK208GR3
Q111	8-729-018-60	TRANSISTOR	2SD2012-LC
Q112	8-729-101-07	TRANSISTOR	2SB798-DL
Q115	8-729-107-46	TRANSISTOR	2SC3624
Q140	8-729-141-83	TRANSISTOR	2SB1094-LK
Q147	8-729-805-45	TRANSISTOR	2SC3395
Q148	8-729-805-45	TRANSISTOR	2SC3395
Q150	8-729-140-75	TRANSISTOR	2SD999-CLCK
Q210	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q250	8-729-805-65	TRANSISTOR	2SA1344
Q251	8-729-805-65	TRANSISTOR	2SA1344
Q255	8-729-805-40	TRANSISTOR	2SC3900
Q265	8-729-805-40	TRANSISTOR	2SC3900
Q311	8-729-805-65	TRANSISTOR	2SA1344
Q312	8-729-805-41	TRANSISTOR	2SC3398
Q315	8-729-120-28	TRANSISTOR	2SC1623-L5L6
Q319	8-729-805-65	TRANSISTOR	2SA1344

< RESISTOR >

R110	1-216-073-00	METAL CHIP	10K	5%	1/10W
R111	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R140	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R144	1-216-073-00	METAL CHIP	10K	5%	1/10W
R147	1-216-073-00	METAL CHIP	10K	5%	1/10W
R150	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R160	1-216-043-00	METAL CHIP	560	5%	1/10W
R172	1-216-025-00	METAL CHIP	100	5%	1/10W
R201	1-216-049-00	METAL CHIP	1K	5%	1/10W
R202	1-216-049-00	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description				Remark
R203	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R205	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R206	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R207	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R208	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R209	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R210	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R211	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R212	1-216-001-00	METAL CHIP	10	5%	1/10W	
R215	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R216	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R217	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R218	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R219	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R220	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R221	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R222	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R223	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R224	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R225	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R226	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R227	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R228	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R229	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R233	1-216-021-00	METAL CHIP	68	5%	1/10W	
R234	1-216-021-00	METAL CHIP	68	5%	1/10W	
R251	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R252	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R253	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R254	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R255	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R256	1-216-041-00	METAL CHIP	470	5%	1/10W	
R257	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R258	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R261	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R262	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R263	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R264	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R265	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R266	1-216-041-00	METAL CHIP	470	5%	1/10W	
R301	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R303	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R304	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R312	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R315	1-216-001-00	METAL CHIP	10	5%	1/10W	
R316	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	

Ref. No.	Part No.	Description				Remark
R317	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R318	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R319	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R325	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R326	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R327	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R328	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R346	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R350	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R351	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R352	1-216-295-00	METAL CHIP	0	5%	1/10W	
R353	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R354	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R355	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R356	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R360	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R501	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R502	1-216-097-00	METAL CHIP	100K	5%	1/10W	

< VIBRATOR >

X201	1-579-125-11	VIBRATOR, CERAMIC (8MHz)
X301	1-579-175-11	VIBRATOR, CERAMIC (10MHz)
X304	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)
X306	1-577-082-11	VIBRATOR, CERAMIC (4MHz)

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* A-4365-769-A PANEL BOARD, COMPLETE
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*	4-932-810-11	CUSHION (FL)
*	4-954-187-11	HOLDER (FL)

< CAPACITOR >

C601	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C602	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C603	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C604	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C605	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C606	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C607	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C608	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C609	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C610	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C611	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C612	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C613	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C614	1-124-584-00	ELECT	100uF	20%	10V
C615	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C616	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C617	1-124-248-00	ELECT	22uF	20%	35V
C618	1-136-173-00	FILM	0.47uF	5%	50V

PANEL

Ref. No.	Part No.	Description				Remark
C619	1-136-173-00	FILM	0.47uF	5%	50V	
C620	1-136-173-00	FILM	0.47uF	5%	50V	
C621	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C622	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C623	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C624	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C625	1-164-346-11	CERAMIC CHIP	1uF		16V	
C626	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C627	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C628	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C629	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C630	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C631	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C632	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C633	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C634	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C635	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C636	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C637	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C638	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C639	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C640	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C641	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C642	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C643	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C644	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C645	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C646	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C647	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C648	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C649	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C650	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C651	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C652	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C653	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C654	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C655	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C656	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C657	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C658	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C659	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C660	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	

< CONNECTOR >

* CN601	1-568-856-11	SOCKET, CONNECTOR 13P

< IC >

IC601	8-759-261-63	IC	M66004M6FP

Ref. No.	Part No.	Description				Remark

< FLUORESCENT INDICATOR >

FL601	1-517-241-11	INDICATOR TUBE, FLUORESCENT

< COIL >

L601	1-408-793-21	INDUCTOR CHIP	220uH
L602	1-410-393-11	INDUCTOR CHIP	100uH

< TRANSISTOR >

Q603	8-729-805-41	TRANSISTOR	2SC3398

< RESISTOR >

R601	1-216-041-00	METAL CHIP	470	5%	1/10W
R602	1-216-045-00	METAL CHIP	680	5%	1/10W
R603	1-216-049-00	METAL CHIP	1K	5%	1/10W
R604	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R605	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R606	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R607	1-216-075-00	METAL CHIP	12K	5%	1/10W
R608	1-216-041-00	METAL CHIP	470	5%	1/10W
R609	1-216-045-00	METAL CHIP	680	5%	1/10W
R610	1-216-049-00	METAL CHIP	1K	5%	1/10W
R611	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R612	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R613	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R614	1-216-075-00	METAL CHIP	12K	5%	1/10W
R616	1-216-083-00	METAL CHIP	27K	5%	1/10W
R617	1-216-097-00	METAL CHIP	100K	5%	1/10W
R618	1-216-041-00	METAL CHIP	470	5%	1/10W
R619	1-216-045-00	METAL CHIP	680	5%	1/10W
R620	1-216-049-00	METAL CHIP	1K	5%	1/10W
R622	1-216-073-00	METAL CHIP	10K	5%	1/10W

< SWITCH >

S601	1-554-303-21	SWITCH, TACTILE (▷⏸)
S602	1-554-303-21	SWITCH, TACTILE (□)
S603	1-554-303-21	SWITCH, TACTILE (BAND)
S604	1-554-303-21	SWITCH, TACTILE (MEMORY)
S605	1-554-303-21	SWITCH, TACTILE (MODE)
S606	1-554-303-21	SWITCH, TACTILE (STEREO/MONO)
S607	1-554-303-21	SWITCH, TACTILE (+)
S608	1-554-303-21	SWITCH, TACTILE (-)
S609	1-554-303-21	SWITCH, TACTILE (▶▶ ▶▶|)
S610	1-554-303-21	SWITCH, TACTILE (|◀◀ ◀◀)
S614	1-554-303-21	SWITCH, TACTILE (EDIT)
S615	1-554-303-21	SWITCH, TACTILE (REPEAT)
S616	1-554-303-21	SWITCH, TACTILE (PLAY MODE)
S617	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE ⏏)
S618	1-554-303-21	SWITCH, TACTILE (EON)
S619	1-554-303-21	SWITCH, TACTILE (PTY)

Ref. No.	Part No.	Description			Remark
S620	1-554-303-21	SWITCH, TACTILE (DISPLAY)			

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Ref. No.	Part No.	Description			Remark
*	A-4303-459-A	TCB BOARD, COMPLETE (AEP, UK)			

****

Ref. No.	Part No.	Description			Remark
*	A-4303-460-A	TCB BOARD, COMPLETE (G, IT)			

****

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C1	1-126-934-11	ELECT	220uF	20%	16V
C2	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C3	1-163-009-11	CERAMIC CHIP	1000PF	10%	50V
C5	1-163-031-11	CERAMIC CHIP	0.01uF		50V (AEP, UK)
C6	1-163-038-00	CERAMIC CHIP	0.1uF		25V (AEP, UK)
C6	1-216-295-00	METAL CHIP	0	5%	1/10W (G, IT)
C8	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C9	1-163-012-00	CERAMIC CHIP	1800PF	10%	50V (AEP, UK)
C10	1-163-011-11	CERAMIC CHIP	1500PF	10%	50V (AEP, UK)
C11	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V (AEP, UK)
C11	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V (G, IT)
C12	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C13	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V (AEP, UK)
C21	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C22	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C23	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C24	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C25	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C26	1-164-346-11	CERAMIC CHIP	1uF		16V
C27	1-124-257-00	ELECT	2.2uF	20%	50V
C29	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C31	1-124-257-00	ELECT	2.2uF	20%	50V
C32	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C33	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C34	1-164-005-11	CERAMIC CHIP	0.47uF		25V (AEP, UK)
C35	1-163-033-00	CERAMIC CHIP	0.022uF		50V (AEP, UK)
C36	1-163-033-00	CERAMIC CHIP	0.022uF		50V (AEP, UK)
C51	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C52	1-126-162-11	ELECT	3.3uF	20%	50V
C53	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C54	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C55	1-163-105-00	CERAMIC CHIP	33PF	5%	50V (AEP, UK)
C55	1-163-135-00	CERAMIC CHIP	560PF	5%	50V (G, IT)
C56	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (G, IT)
C57	1-164-346-11	CERAMIC CHIP	1uF		16V
C58	1-164-346-11	CERAMIC CHIP	1uF		16V
C59	1-164-346-11	CERAMIC CHIP	1uF		16V
C60	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C61	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C62	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C63	1-164-346-11	CERAMIC CHIP	1uF		16V
C64	1-164-346-11	CERAMIC CHIP	1uF		16V
C65	1-164-346-11	CERAMIC CHIP	1uF		16V
C66	1-164-346-11	CERAMIC CHIP	1uF		16V
C69	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C71	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C72	1-126-934-11	ELECT	220uF	20%	16V
C73	1-124-257-00	ELECT	2.2uF	20%	50V
C74	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C75	1-126-157-11	ELECT	10uF	20%	16V
C76	1-126-933-11	ELECT	100uF	20%	16V
C79	1-126-157-11	ELECT	10uF	20%	16V
C80	1-126-925-11	ELECT	470uF	20%	10V
C81	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C82	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C83	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C86	1-163-016-00	CERAMIC CHIP	3900PF	10%	50V
C87	1-163-016-00	CERAMIC CHIP	3900PF	10%	50V

< FILTER >

Ref. No.	Part No.	Description	Remark
CF1	1-567-389-11	FILTER, CERAMIC	
CF2	1-567-389-11	FILTER, CERAMIC	(G, IT)
CF51	1-567-389-11	FILTER, CERAMIC	

< TERMINAL >

Ref. No.	Part No.	Description	Remark
* CN3	1-537-613-11	TERMINAL (8P)	

< DIODE >

Ref. No.	Part No.	Description	Remark
D21	8-719-422-46	DIODE MA8056	
D51	8-719-016-74	DIODE 1SS352	

< FRONT END >

Ref. No.	Part No.	Description	Remark
FE1	1-465-673-11	FRONT END (2 BAND)	(AEP, UK)
FE1	1-465-007-11	FRONT END (4 GANG)	(G, IT)
FE2	1-239-261-12	ESCAPSULATED COMPONENT	(AEP, UK)
FE2	1-239-260-11	ESCAPSULATED COMPONENT	(G, IT)
FE3	1-236-463-11	ESCAPSULATED COMPONENT	(AEP, UK)

TCB

Ref. No.	Part No.	Description	Remark
		< FILTER >	
FL51	1-239-029-11	ESCAPSULATED COMPONENT	(G,IT)
		< IC >	
IC21	8-759-821-43	IC LC7218M	
IC51	8-759-823-68	IC LA1851NM	
		< TRANSFORMER >	
IFT51	1-406-821-11	COIL (DISCRIMINATOR)	
IFT52	1-404-713-11	TRANSFORMER, IF	
		< JUMPER RESISTOR >	
JW1	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW2	1-216-295-00	METAL CHIP 0 5% 1/10W	(AEP,UK)
JW3	1-216-295-00	METAL CHIP 0 5% 1/10W	(G,IT)
JW4	1-216-295-00	METAL CHIP 0 5% 1/10W	(G,IT)
JW5	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW6	1-216-295-00	METAL CHIP 0 5% 1/10W	(G,IT)
JW7	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW8	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW9	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< COIL >	
L1	1-408-793-21	CHIP INDUCTOR 220uH	(AEP,UK)
L51	1-408-798-00	CHIP INDUCTOR 1MMH	
		< FILTER >	
LPF51	1-239-597-11	FILTER, LOW PASS	
LPF52	1-239-597-11	FILTER, LOW PASS	
		< TRANSISTOR >	
Q1	8-729-804-72	TRANSISTOR 2SC2814-F4	
Q2	8-729-804-72	TRANSISTOR 2SC2814-F4	(G,IT)
Q3	8-729-810-16	TRANSISTOR 2SA1678	
Q4	8-729-602-36	TRANSISTOR 2SA1602-F	(AEP,UK)
Q5	8-729-810-28	TRANSISTOR 2SC4398	(AEP,UK)
Q6	8-729-602-36	TRANSISTOR 2SA1602-F	(AEP,UK)
Q7	8-729-810-28	TRANSISTOR 2SC4398	(AEP,UK)
Q21	8-729-602-21	TRANSISTOR 2SC4154-F	
Q22	8-729-232-69	TRANSISTOR 2SK208GR3	
Q23	8-729-232-59	TRANSISTOR 2SC4666B	
Q24	8-729-232-69	TRANSISTOR 2SK208GR3	(AEP,UK)
Q25	8-729-232-59	TRANSISTOR 2SC4666B	(AEP,UK)
Q51	8-729-602-21	TRANSISTOR 2SC4154-F	
Q52	8-729-602-21	TRANSISTOR 2SC4154-F	
Q53	8-729-810-28	TRANSISTOR 2SC4398	
		< RESISTOR >	
R1	1-216-037-00	METAL CHIP 330 5% 1/10W	
R2	1-216-037-00	METAL CHIP 330 5% 1/10W	
R3	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R4	1-216-037-00	METAL CHIP 330 5% 1/10W	
R5	1-216-109-00	METAL CHIP 330K 5% 1/10W	(G,IT)
R6	1-216-037-00	METAL CHIP 330 5% 1/10W	(G,IT)
R7	1-216-017-00	METAL CHIP 47 5% 1/10W	
R8	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(AEP,UK)
R9	1-216-089-11	METAL CHIP 47K 5% 1/10W	(AEP,UK)
R10	1-216-097-11	METAL CHIP 100K 5% 1/10W	(AEP,UK)
R11	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(AEP,UK)
R12	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(AEP,UK)
R13	1-216-089-11	METAL CHIP 47K 5% 1/10W	
R14	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R15	1-216-121-00	METAL CHIP 1M 5% 1/10W	(AEP,UK)
R15	1-216-295-00	METAL CHIP 0 5% 1/10W	(G,IT)
R16	1-216-089-11	METAL CHIP 47K 5% 1/10W	(AEP,UK)
R21	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R22	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R23	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R24	1-216-025-00	METAL CHIP 100 5% 1/10W	
R25	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R26	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R27	1-216-073-00	METAL CHIP 10K 5% 1/10W	(AEP,UK)
R28	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R29	1-216-025-00	METAL CHIP 100 5% 1/10W	
R30	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R31	1-216-043-00	METAL CHIP 560 5% 1/10W	
R32	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R33	1-216-035-00	METAL CHIP 270 5% 1/10W	
R34	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R35	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R36	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R37	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R38	1-216-025-00	METAL CHIP 100 5% 1/10W	
R39	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	(AEP,UK)
R40	1-216-043-00	METAL CHIP 560 5% 1/10W	(AEP,UK)
R41	1-216-049-00	METAL CHIP 1K 5% 1/10W	(AEP,UK)
R42	1-216-035-00	METAL CHIP 270 5% 1/10W	(AEP,UK)
R43	1-216-081-00	METAL CHIP 22K 5% 1/10W	(AEP,UK)
R44	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(AEP,UK)
R45	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(AEP,UK)
R46	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	(AEP,UK)
R51	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R52	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R53	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R54	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	
R55	1-216-075-00	METAL CHIP 12K 5% 1/10W	(AEP,UK)
R56	1-216-075-00	METAL CHIP 12K 5% 1/10W	(G,IT)
R57	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R58	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R59	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R60	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R61	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R62	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R63	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R64	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R65	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R66	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R67	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R68	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R69	1-216-025-00	METAL CHIP 100 5% 1/10W	
R70	1-216-025-00	METAL CHIP 100 5% 1/10W	
R71	1-216-089-11	METAL CHIP 47K 5% 1/10W	
R72	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R73	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R74	1-216-013-00	METAL CHIP 33 5% 1/10W	
R75	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description	Remark
RV51	1-238-601-11	RES, ADJ, CARBON 22K	
RV52	1-238-601-11	RES, ADJ, CARBON 22K	
RV53	1-238-598-11	RES, ADJ, CARBON 2.2K	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
TP51	1-564-505-11	PLUG, CONNECTOR 2P	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X21	1-579-585-11	VIBRATOR, CRYSTAL (7.2MHz)	
X51	1-577-075-11	OSCILLATOR, CERAMIC (456kHz)	

****

Ref. No.	Part No.	Description	Remark
*	1-649-896-11	TRANS BOARD	

****

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C801	1-124-122-11	ELECT 100uF 20% 50V	
C802	1-124-122-11	ELECT 100uF 20% 50V	
C803	1-124-122-11	ELECT 100uF 20% 50V	
C804	1-124-122-11	ELECT 100uF 20% 50V	
C805	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C810	1-165-319-11	CERAMIC CHIP 0.1uF 50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN801	1-568-852-11	SOCKET, CONNECTOR 9P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D801	8-719-200-02	DIODE 10E2	
D802	8-719-200-02	DIODE 10E2	
D803	8-719-200-02	DIODE 10E2	
D804	8-719-021-23	DIODE UZM4.7B	
D805	8-719-934-22	DIODE HZS30-2L	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠ICP801	1-532-839-11	LINK, IC (PRF1000 1.0A)	
⚠ICP802	1-532-839-11	LINK, IC (PRF1000 1.0A)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q801	8-729-804-41	TRANSISTOR 2SB1122-S	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R802	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R803	1-216-041-00	METAL CHIP 470 5% 1/10W	
R804	1-216-041-00	METAL CHIP 470 5% 1/10W	
R805	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R806	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R812	1-216-073-00	METAL CHIP 10K 5% 1/10W	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
⚠T801	1-426-704-11	TRANSFORMER, POWER	

****

MISCELLANEOUS

****

Ref. No.	Part No.	Description	Remark
7	1-751-981-11	WIRE (FLAT TYPE) (13 CORE)	
8	1-765-175-11	WIRE (FLAT TYPE) (26 CORE)	
15	1-751-980-11	WIRE (FLAT TYPE) (9 CORE)	
* 301	1-452-538-11	MAGNET	
⚠354	8-848-144-11	OPTICAL PICK-UP BLOCK (KSS-240A)	
357	1-575-001-11	WIRE, FLAT TYPE (12 CORE)	
FL601	1-517-241-11	INDICATOR TUBE, FLUORESCENT	
M101	X-4917-523-3	MOTOR ASSY (SPINDLE)	
M102	X-4917-504-1	MOTOR ASSY (SLED)	
M151	A-4604-363-A	MOTOR (L) ASSY (LOADING)	
S101	1-572-085-11	SWITCH, LEAF (LIMIT)	
⚠T801	1-426-704-11	TRANSFORMER, POWER	
* TM101	1-537-288-11	TERMINAL BOARD, ANTENNA (PAL)	

****

****

HARDWARE LIST

****

Ref. No.	Part No.	Description	Remark
#1	7-682-547-09	SCREW +BVTT 3X6 (S)	
#2	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#3	7-621-849-00	SCREW, TAPPING	
#4	7-621-255-15	SCREW +P 2X3	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

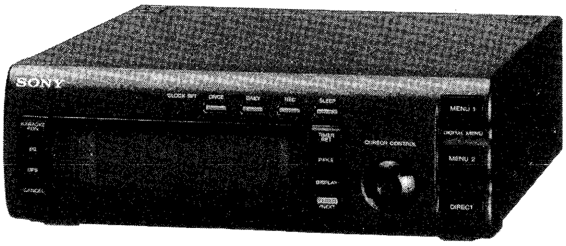
Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

English
94D097560-1
Printed in Germany
© 1994. 4
Published by Home A&V Products Div.
Quality Engineering Dept.

SEQ-H4900

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model



SEQ-H4900 is the Graphic equalizer
section in MHC-4900/E80X

SPECIFICATIONS

Inputs

VIDEO (phono jacks):
MD/DAT (phono jacks):
- AEP, UK, G, IT model:
  sensitivity 250 mV,
- E, MX, SP, AUS model:
  sensitivity 450 mV
  impedance 47 kilohms

PHONO (phono jack):
- sensitivity 5 mV,
  impedance 47 kilohms

Output

MD/DAT (phono jacks):
- voltage 260 mV
- AEP, UK, G, IT model:
  impedance 2 kilohms
- E, MX, SP, AUS model:
  impedance 1 kilohms

Dimensions

Approx. 225 x 80 x 235 mm (w/h/d)
(8 7/8 x 3 1/4 x 9 3/8 inches)

Mass

Approx. 3.0 kg
(6 lb 10 oz)

General

Destination	requirements	Power consumption
UK model	240 V AC,	40 W
AEP, IT, G model	220 – 230 V AC, 50/60 Hz	40 W
E, MX, SP, AUS model	110 – 120 V or 220 – 240 V AC 40 W Adjustable, 50/60 Hz	40 W

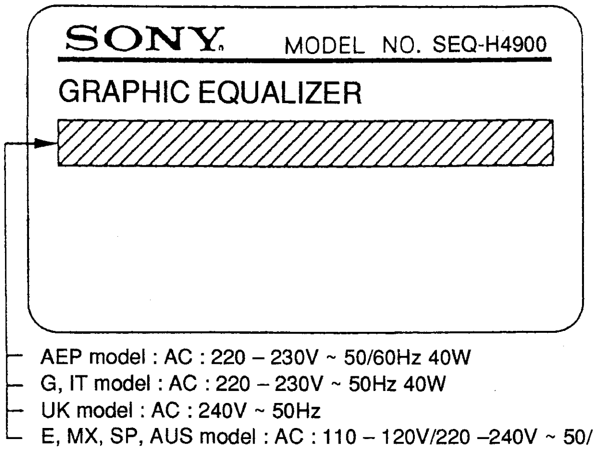
Design and specifications subject to change without notice.

GRAPHIC EQUALIZER

SONY®

— MODEL IDENTIFICATION —

(Specification Label)



- AEP model : AC : 220 – 230V ~ 50/60Hz 40W
- G, IT model : AC : 220 – 230V ~ 50Hz 40W
- UK model : AC : 240V ~ 50Hz
- E, MX, SP, AUS model : AC : 110 – 120V/220 –240V ~ 50/60Hz 40W

Note :

• G	: German model.
IT	: Italian model.
MX	: Mexican model.
SP	: Singapore model.
AUS	: Australian model.

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SERVICE NOTE

- **Power Supply Used in Servicing**
  This unit have its own power supply as it works on the power supplied from the amplifier (TA-H4900) used for this series, connect this amplifier when servicing the unit (conduction repair, etc.).

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING !!

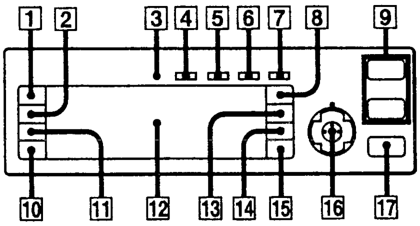
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1

GENERAL

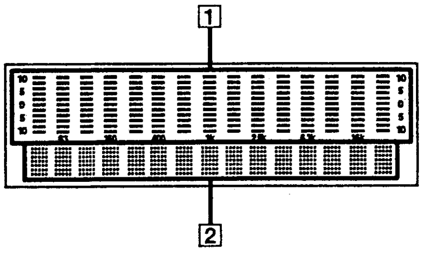
This section is extracted from instruction manual.

Front Panel



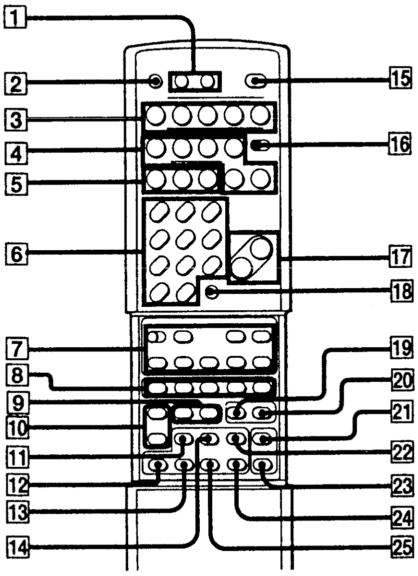
1 KARAOKE PON button (25)
2 EQ button (21)
3 CLOCK SET button (6)
4 ONCE button* (23)
5 DAILY button* (23)
6 REC button* (24)
7 SLEEP button* (23)
8 TIMER SET button (23)
9 MENU 1, 2 buttons (15, 20)
10 CANCEL button (22)
11 DPS (Digital Presence Surround) button (22)
12 Display window (6, 21, 23)
13 P.FILE button (22)
14 DISPLAY button (21)
15 ENTER/NEXT button (21, 23)
16 CURSOR CONTROL* (6, 21, 23)
17 DIRECT button (15, 21)

Display Window



1 Graphic equalizer indication (21)
2 Audio emphasis indication (21)

Remote commander (RM-S49/RM-S49E)



1 TAPE DECK A/B buttons (14)
2 SLEEP button (23)
3 CD/MD operating buttons (7)
4 Cassette deck operating buttons (14)
5 Tuner operating buttons (10)
6 CD/Tuner/numeric buttons (7, 11)
7 VCR operating buttons (26)
8 TV operating buttons (26)
9 MENU 1, 2 button (15, 20)
10 FUNCTION </> buttons (16, 25, 26)
11 CONTINUE button (8)
12 CHECK button (9)
13 CLEAR button (9)
14 SHUFFLE button (8)
15 SYSTEM POWER switch (7)
16 CD/MD switch (7)
17 VOLUME +/– buttons (7, 20)
18 MUTING button (20)
19 P.FILE button (22)
20 DIRECT button (15, 21)
21 RDS EON button (12) (AEP, UK, IT, G model) (RM-S49)
21 REC button (E, MX, SP, AUS model) (RM-S49E)
22 PROGRAM button (8)
23 DISPLAY button (21) (AEP, UK, IT, G model) (RM-S49)
23 REC MUTE button (E, MX, SP, AUS model) (RM-S49E)
24 TIME button (8)
25 REPEAT button (9)

SECTION 2
TEST MODE

[TEST MODE]

This unit turns on and off the power when connected to the pre-main amplifier (TA-H4900).
If the amplifier is not connected, it will remain in the STANDBY (Power off) condition even when AC POWER SUPPLY is input.
When the test mode is set, the following tests can be carried out.

Setting the Test Mode

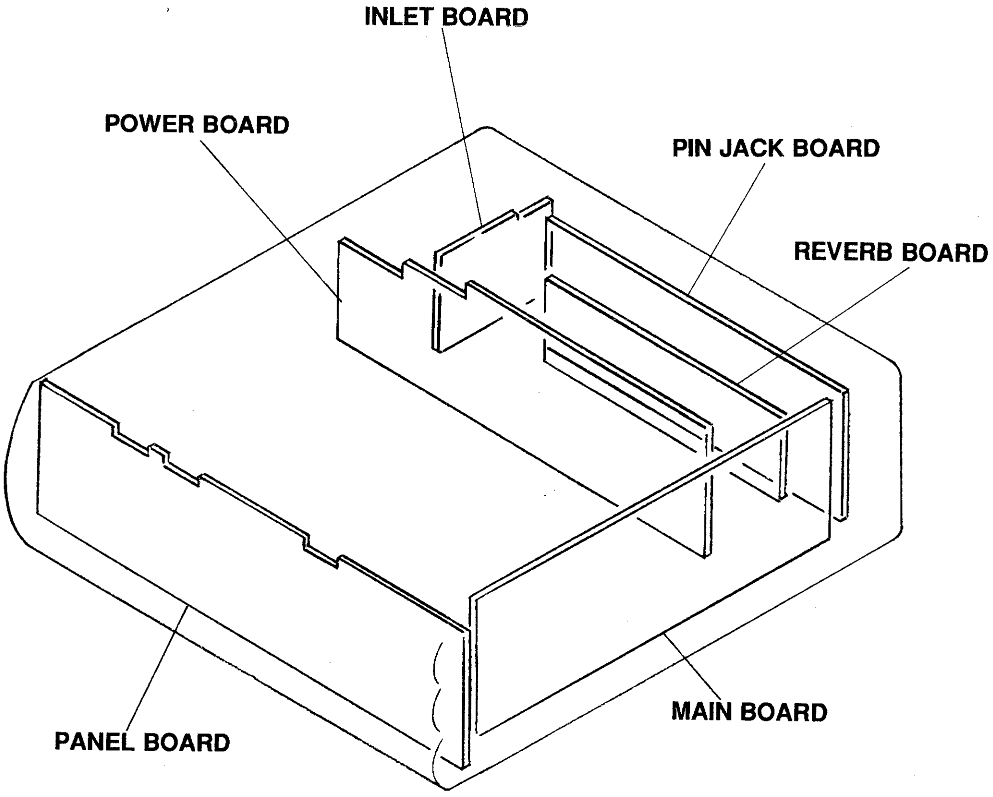
Test mode ON/OFF	Press the ENTER/NEXT button and CANCEL button together.
1. EQUALIZER CHECK ON/OFF	Press the EQ button
• EQ MAX	Press the CURSOR CONTROL ▲ button
• EQ FLAT	Press the CURSOR CONTROL ◀ or ▶ button
• EQ MIN	Press the CURSOR CONTROL ▼ button
2. SURROUND CHECK ON/OFF	Press the DSP button.
3. FL CHECK ON/OFF	Press the ONCE button.
4. LED CHECK ON/OFF	Press the REC button.
5. KEY CHECK ON/OFF	Press the DAILY button.

* The test mode can be set when power is supplied only for SEQ-H4900 (all connections removed).

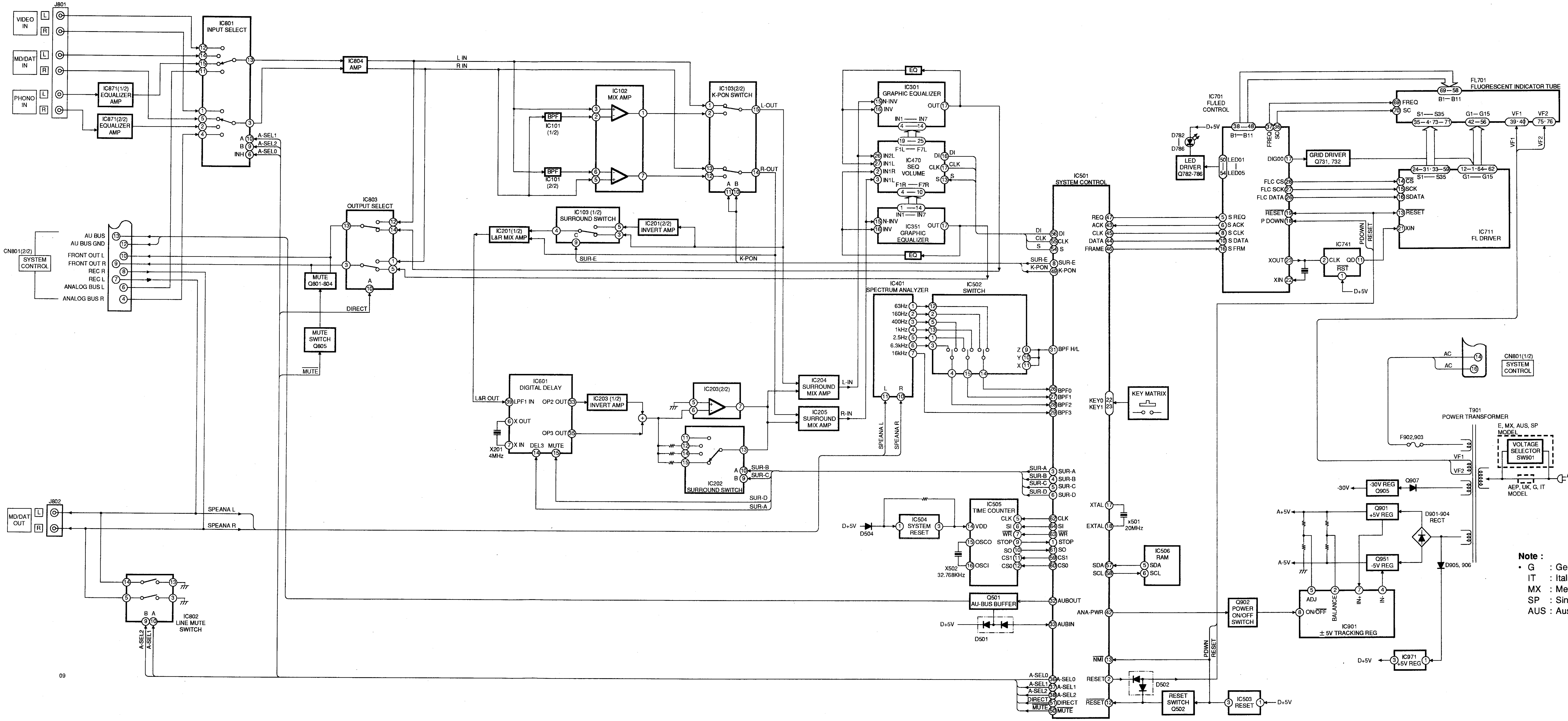
- When all checks of check mode "FL CHECK", "LED CHECK" have been complieted, the unit automatically exits the check mode.
- As the EQUALIZER and SURROUND effects remain even after the unit exits the "EQUALIZER CHECK" and "SURROUND CHECK"check modes, press the EQ button or DSP button after checking the effects to return the unit to its original state.
- To stop the "KEY CHECK", press all the buttons.

SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION


INLET BOARD
POWER BOARD
PIN JACK BOARD
REVERB BOARD
MAIN BOARD
PANEL BOARD

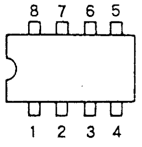
3-2. BLOCK DIAGRAM


J801
VIDEO IN
MD/DAT IN
PHONO IN
L
R
IC871(1/2) EQUALIZER AMP
IC871(2/2) EQUALIZER AMP
IC801 INPUT SELECT
A-SEL1
A-SEL2
A-SEL0
IC804 AMP
L IN
R IN
BPF
IC101 (1/2)
IC101 (2/2)
IC102 MIX AMP
IC103(2/2) K-PON SWITCH
L-OUT
R-OUT
IC803 OUTPUT SELECT
IC103 (1/2) SURROUND SWITCH
IC201(2/2) INVERT AMP
IC201(1/2) L&R MIX AMP
SUR-E
K-PON
MUTE Q801-804
MUTE SWITCH Q805
MUTE
DIRECT
CN801(2/2) SYSTEM CONTROL
AU BUS
AU BUS GND
FRONT OUT L
FRONT OUT R
REC R
REC L
ANALOG BUS L
ANALOG BUS R
EQ
IC301 GRAPHIC EQUALIZER
N-INV
INV
IN1 — IN7
IC470 SEQ VOLUME
F1L — F7L
F1R — F7R
DI
CLK
S
IC351 GRAPHIC EQUALIZER
OUT
IC401 SPECTRUM ANALYZER
63Hz
160Hz
400Hz
1kHz
2.5kHz
6.3kHz
16kHz
IC502 SWITCH
IC601 DIGITAL DELAY
L&R OUT
LPF1 IN
OP2 OUT
OP3 OUT
X OUT
X IN
DEL3
MUTE
X201 4MHz
IC203 (1/2) INVERT AMP
IC203(2/2)
IC202 SURROUND SWITCH
SUR-B
SUR-C
SUR-D
SUR-A
IC204 SURROUND MIX AMP
IC205 SURROUND MIX AMP
L-IN
R-IN
SPEANA L
SPEANA R
J802
MD/DAT OUT
IC802 LINE MUTE SWITCH
IC501 SYSTEM CONTROL
REQ
ACK
CLK
DATA
FRAME
SUR-E
K-PON
BPF H/L
BPF0
BPF1
BPF2
BPF3
KEY0
KEY1
KEY MATRIX
SUR-A
SUR-B
SUR-C
SUR-D
XTAL
EXTAL
x501 20MHz
IC505 TIME COUNTER
VDD
OSCO
OSCI
STOP
SO
SI
WR
CS1
CS0
X502 32.768kHz
IC504 SYSTEM RESET
D+5V
D504
IC506 RAM
SDA
SCL
Q501 AU-BUS BUFFER
AUBOUT
AUBIN
D501
ANA-PWR
NMI
RESET
A-SEL0
A-SEL1
A-SEL2
DIRECT
MUTE
D502
RESET SWITCH Q502
IC503 RESET
IC701 FL/LED CONTROL
D782 ~ D786
LED DRIVER Q782-786
LED01 ~ LED05
S REQ
S ACK
S CLK
S DATA
S FRM
FLC CS
FLC SCK
FLC DATA
RESET
P DOWN
DIG00
GRID DRIVER Q731, 732
XOUT
XIN
IC741
CLK
QD
RST
PDOWN
FL701 FLUORESCENT INDICATOR TUBE
69 — 58
B1 — B11
FREQ
SC
S1 — S35
G1 — G15
VF1
VF2
IC711 FL DRIVER
CS
SCK
SDATA
XIN
CN801(1/2) SYSTEM CONTROL
AC
T901 POWER TRANSFORMER
F902,903
E, MX, AUS, SP MODEL
VOLTAGE SELECTOR SW901
AEP, UK, G, IT MODEL
AC IN
-30V REG Q905
Q907
-30V
Q901 +5V REG
Q951 -5V REG
D901-904 RECT
D905, 906
A+5V
A-5V
Q902 POWER ON/OFF SWITCH
IC901 ± 5V TRACKING REG
ADJ
BALANCE
ON/OFF
IC971 +5V REG
09

Note :
- G : German model.
- IT : Italian model.
- MX : Mexican model.
- SP : Singapore model.
- AUS : Australian model.

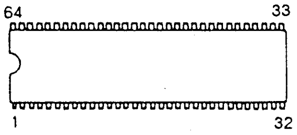
3-3. SEMICONDUCTOR LEAD LAYOUTS

AT24C01-10PC



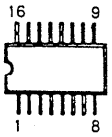
(TOP VIEW)

HD6433288A21P



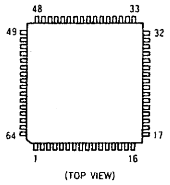
(TOP VIEW)

MC14052BF
MC14053BFP
SN74HC160NS
SPC5243MOB

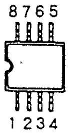


(TOP VIEW)

M38122M2-062FP

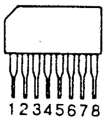

48
33
49
32
64
17
1
16
(TOP VIEW)

M5218AFP

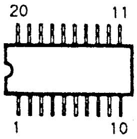


(TOP VIEW)

M5230L-A

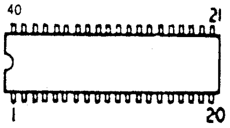


M5289FP-71NC



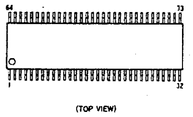
(TOP VIEW)

M65841SP

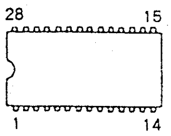


(Top view)

M66004M4FP

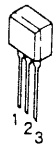

64
33
1
32
(TOP VIEW)

NJU7305L



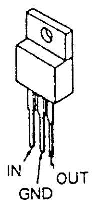
(TOP VIEW)

PST600D

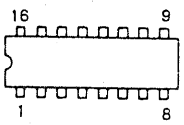


1 : Vcc
2 : GND
3 : Out put

TA7805S

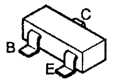


XR1091DCP

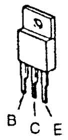


(TOP VIEW)

2SA1235-F
2SA1344
2SC1623-L5L6
2SC3398
2SC3624A-L15



2SB1375-LC
2SD2012-LC



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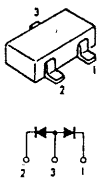

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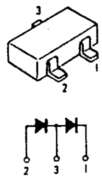
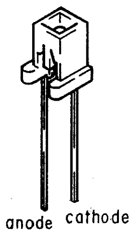
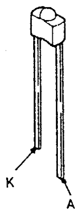


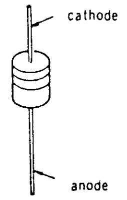
SEL2210S-TH10


anode
cathode

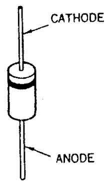
SEL5220S
SEL5420S



UZP-5.1B
UZP-30B


cathode
anode

11ES


CATHODE
ANODE

3-4. PRINTED WIRING BOARDS — MAIN SECTION —

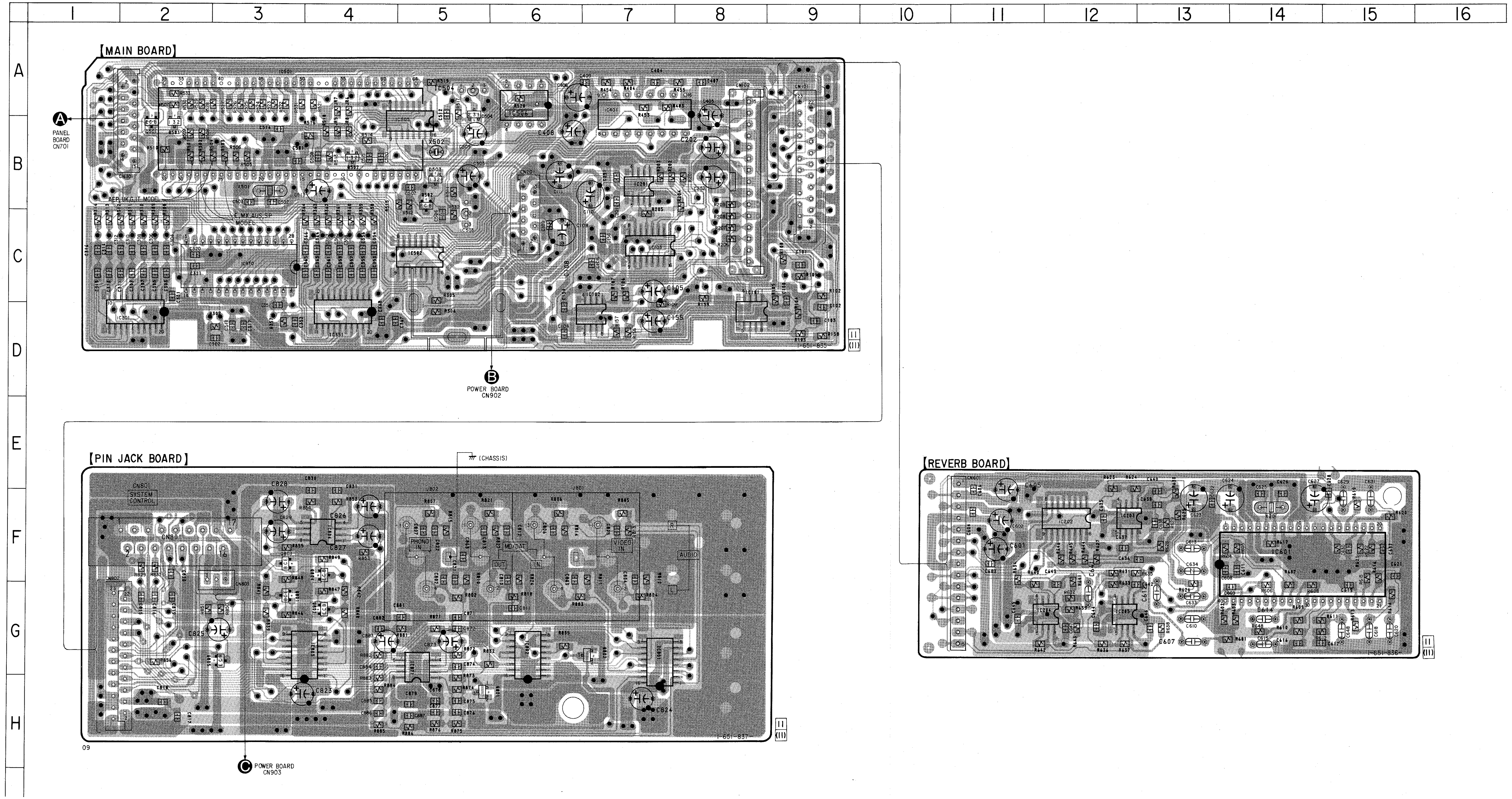
- See page 5 for Circuit Boards Location.

- **Semiconductor Location**

Ref. No.	Location
D501	B-2
D502	B-4
D503	B-5
D504	B-6
D801	H-6
D802	F-7
IC101	C-8
IC102	C-7
IC103	C-7
IC201	B-7
IC202	F-12
IC203	F-13
IC204	G-12
IC205	G-13
IC301	D-2
IC351	D-4
IC401	A-7
IC470	C-3
IC501	A-3
IC502	C-5
IC503	C-5
IC504	A-5
IC505	B-5
IC506	A-6
IC601	F-14
IC801	F-7
IC802	G-6
IC803	G-4
IC804	F-4
IC871	H-5
Q501	B-2
Q502	B-5
Q801	G-3
Q802	G-4
Q803	F-3
Q804	G-4
Q805	H-3

Note:

- ● : Through hole.
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.
- G : German model.
  IT : Italian model.
  MX : Mexican model.
  SP : Singapore model.
  AUS : Australian model.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A
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C
D
E
F
G
H
[MAIN BOARD]
A PANEL BOARD CN701
AEP,UK,G,IT MODEL
E,MX,AUS,SP MODEL
B POWER BOARD CN902
1-651-835-
[PIN JACK BOARD]
(CHASSIS)
CN801 SYSTEM CONTROL
PHONO IN
MD/DAT
OUT
IN
VIDEO IN
AUDIO
1-651-837-
C POWER BOARD CN903
[REVERB BOARD]
1-651-836-

3-5. SCHEMATIC DIAGRAM — MAIN SECTION —

- See page 24 for IC Pin Functions. (IC501)

[PIN JACK BOARD]
[MAIN BOARD]
[REVERB BOARD]
IC801 FUNCTION SELECT
IC871 EQUALIZER AMP
IC802 MUTE
IC803 OUTPUT SELECT
IC804 BUFFER
Q801-804 MUTING
Q805 MUTE SWITCH
CN801 SYSTEM CONTROL
POWER BOARD CN903
IC505 TIME COUNTER
IC506 RAM
IC504 SYSTEM RESET
IC503 RESET
IC501 SYSTEM CONTROL
IC502 SWITCH
Q501 AU BUS BUFFER
Q502 RESET SWITCH
PANEL BOARD CN701
IC201 L&R MIX AMP
IC470 SEQ VOLUME
IC401 G.EQ. DRIVE
IC101 B.P.F
IC102 MIX AMP
IC103 K-PON SWITCH
POWER BOARD CN902
IC301 GRAPHIC EQUALIZER L CH
IC351 GRAPHIC EQUALIZER R CH
IC203 BUFFER
IC204 IC205 SURROUND MIX AMP
IC601 DIGITAL DELAY (SURROUND)
IC202 SURROUND SWITCH
IC401 XR1091
IC202, 801, 802, 803 MC14052BFH
IC103, 502 MC14053BF
IC470 NJU7305L
IC505 SPC5243MOB
IC601 M65841SP

- IC Block Diagrams

IC301, 351 M5289FP

Note:

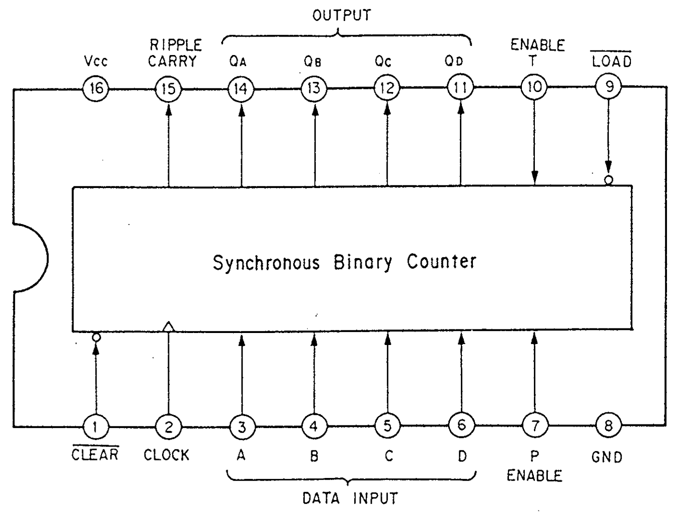
- All capacitors are in µF unless otherwise noted. pF:µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ▭ : panel designation.

> **Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
> Replace only with part number specified.

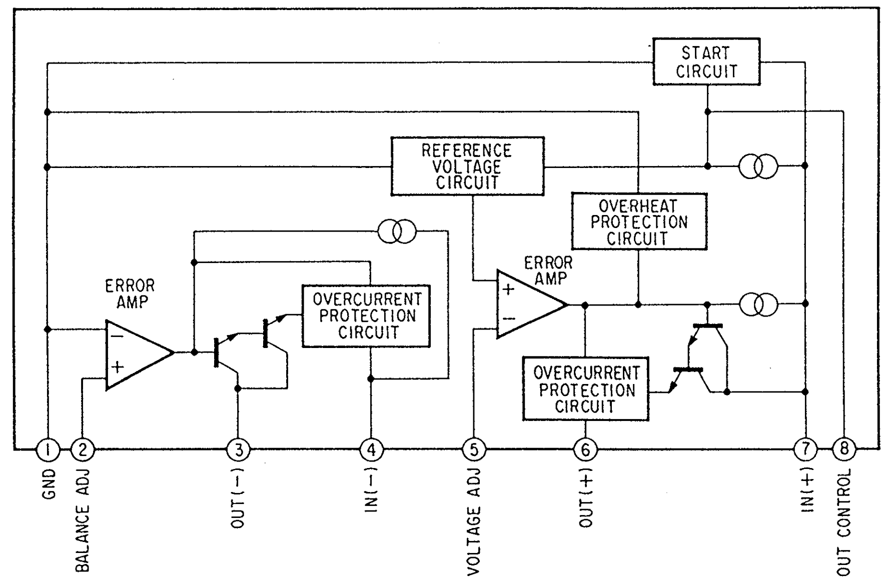
- ▬ : B+ Line
- ▬ ▬ ▬ : B– Line
- Voltage and waveforms are dc with respect to ground in test mode. (See Page 4)
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : PHONO
- G : German model.
  IT : Italian model.
  MX : Mexican model.
  SP : Singapore model.
  AUS : Australian model.

- IC Block Diagrams

IC741 MC74HC160F

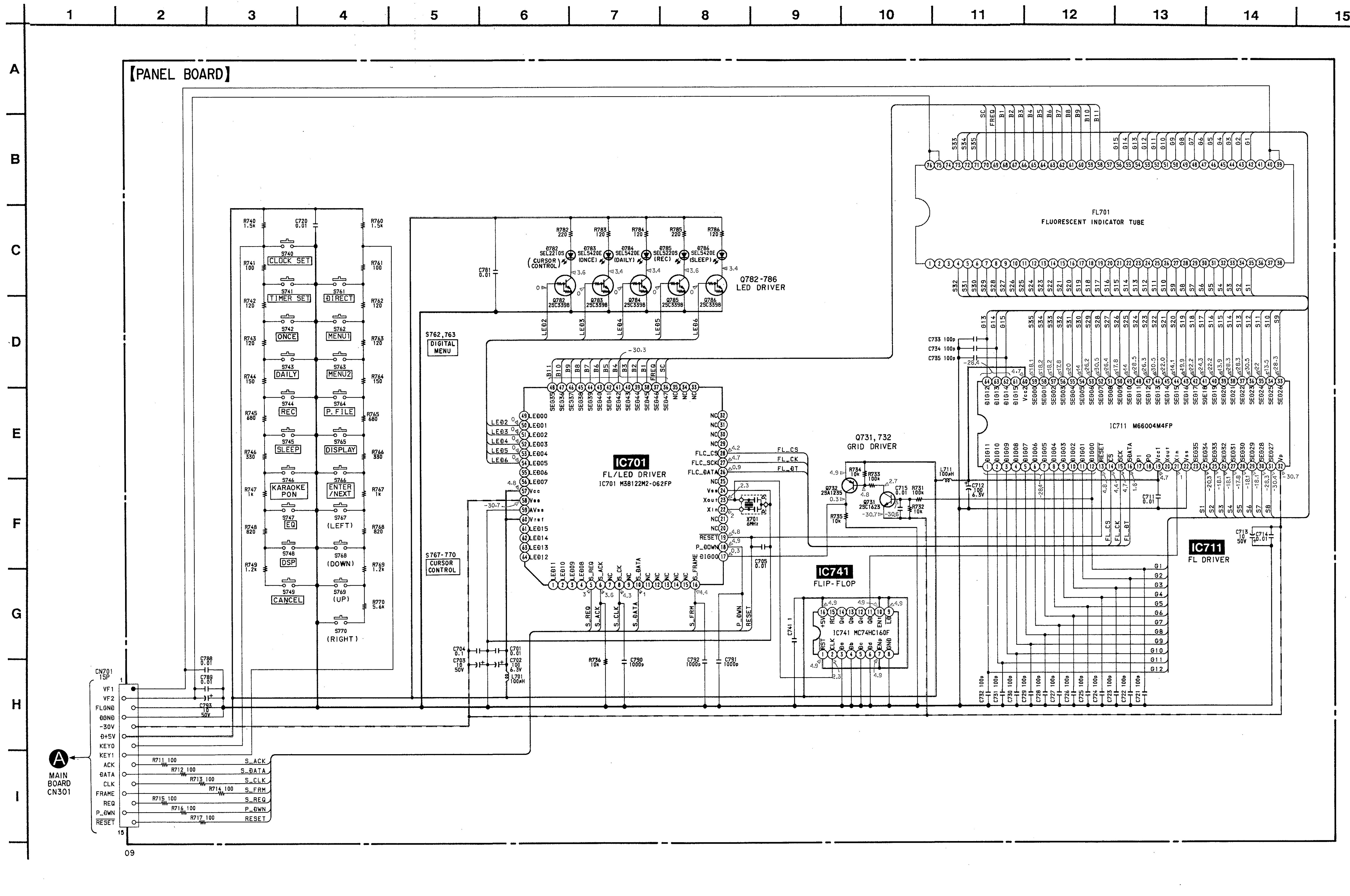

OUTPUT
Vcc
RIPPLE CARRY
QA
QB
QC
QD
ENABLE T
LOAD
Synchronous Binary Counter
CLEAR
CLOCK
A
B
C
D
P ENABLE
GND
DATA INPUT

IC901 M5230L


START CIRCUIT
REFERENCE VOLTAGE CIRCUIT
OVERHEAT PROTECTION CIRCUIT
ERROR AMP
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
OVERCURRENT PROTECTION CIRCUIT
GND
BALANCE ADJ
OUT(−)
IN(−)
VOLTAGE ADJ
OUT(+)
IN(+)
OUT CONTROL

3-6. SCHEMATIC DIAGRAM — PANEL/POWER SECTION —

- See page 26 for IC Pin Functions. (IC701)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A
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D
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F
G
H
I
【PANEL BOARD】
FL701 FLUORESCENT INDICATOR TUBE
IC701
FL/LED DRIVER
IC701 M38122M2-062FP
IC711
FL DRIVER
IC711 M66004M4FP
IC741
FLIP-FLOP
IC741 MC74HC160F
Q731,732 GRID DRIVER
Q782-786 LED DRIVER
CLOCK SET
TIMER SET
ONCE
DAILY
REC
SLEEP
KARAOKE PON
EQ
DSP
CANCEL
DIRECT
MENU1
MENU2
P.FILE
DISPLAY
ENTER /NEXT
(LEFT)
(DOWN)
(UP)
(RIGHT)
S762,763 DIGITAL MENU
S767-770 CURSOR CONTROL
CN701
A
MAIN BOARD CN301
VF1
VF2
FLGND
GGND
-30V
G+5V
KEY0
KEY1
ACK
DATA
CLK
FRAME
REQ
P_DWN
RESET

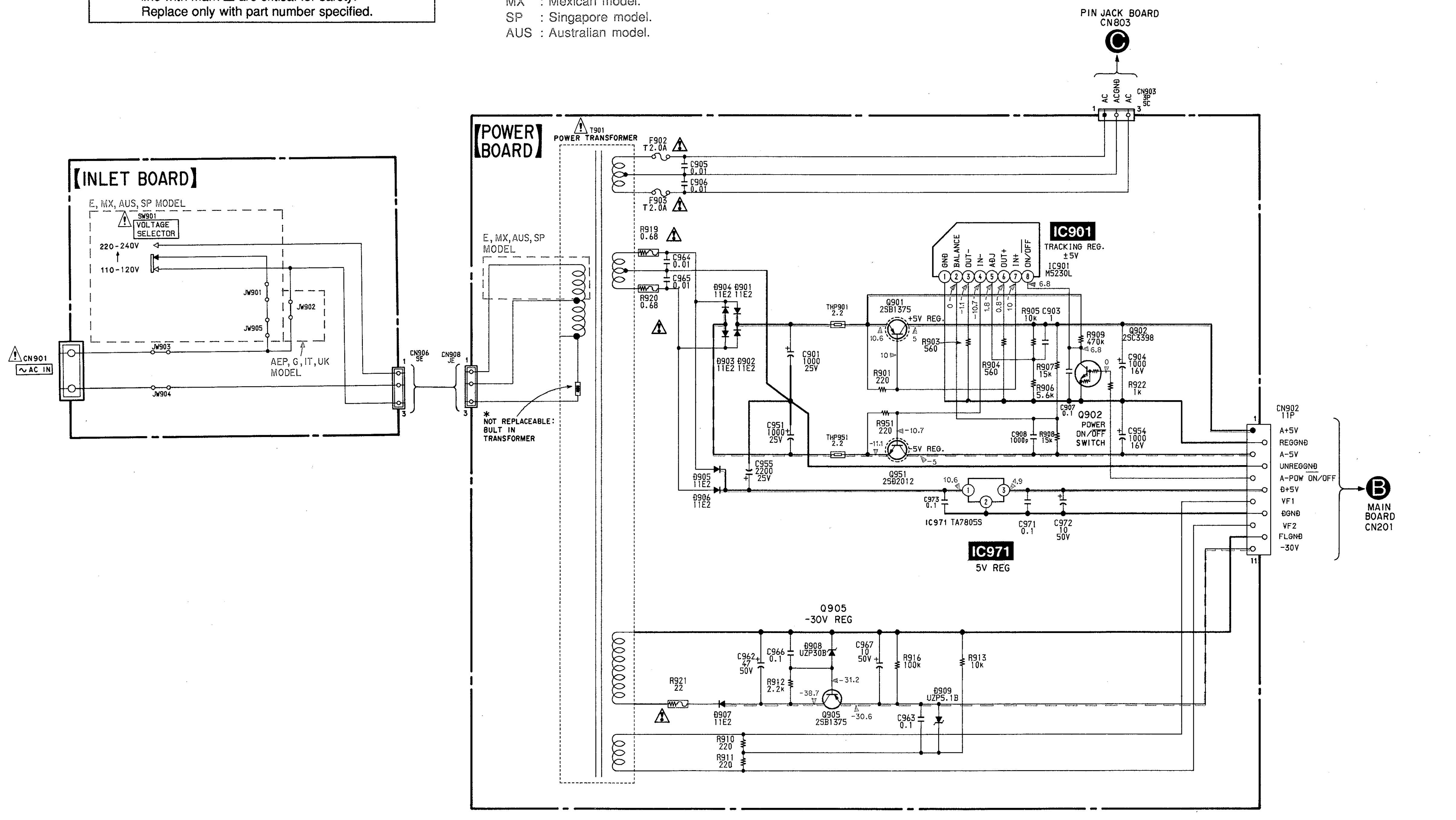
Note:

- All capacitors are in µF unless otherwise noted. pF:µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- : fusible resistor.
- : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- : B+ Line
- : B− Line
- Voltage and waveforms are dc with respect to ground in test mode. (See Page 4)
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Abbreviations.

G : German model.
IT : Italian model.
MX : Mexican model.
SP : Singapore model.
AUS : Australian model.


16
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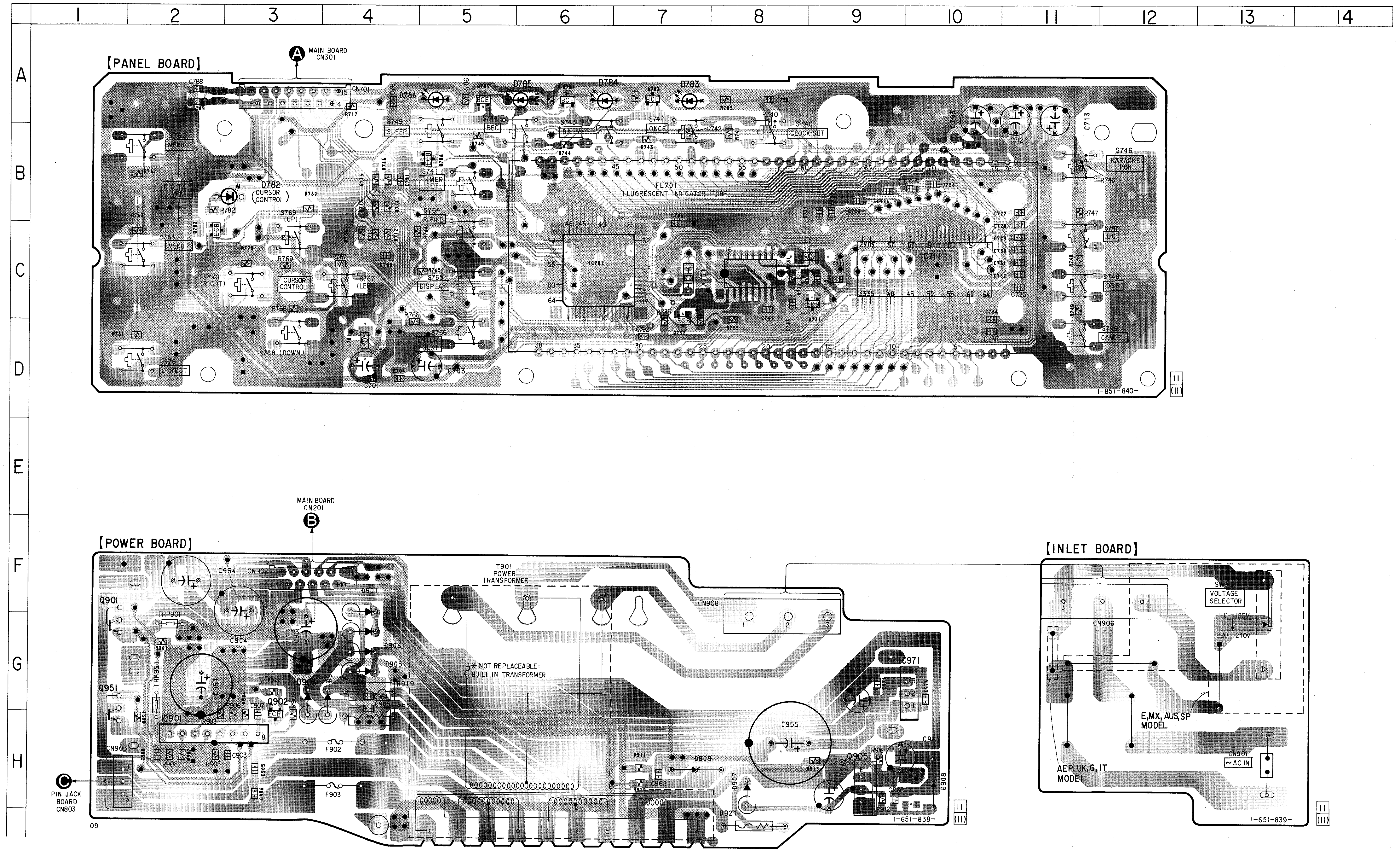
23
24
25
26
27
28
PIN JACK BOARD CN803
C
【INLET BOARD】
E, MX, AUS, SP MODEL
VOLTAGE SELECTOR
220-240V
110-120V
CN901 AC IN
AEP, G, IT, UK MODEL
【POWER BOARD】
T901 POWER TRANSFORMER
E, MX, AUS, SP MODEL
NOT REPLACEABLE: BUILT IN TRANSFORMER
IC901
TRACKING REG. ±5V
IC901 M5230L
Q902 POWER ON/OFF SWITCH
IC971 TA7805S
IC971
5V REG
Q905 -30V REG
CN902
A+5V
REGGND
A-5V
UNREGGND
A-POW ON/OFF
G+5V
VF1
GGND
VF2
FLGND
-30V
B
MAIN BOARD CN201

3-7. PRINTED WIRING BOARDS — PANEL/POWER SECTION —

- See page 5 for Circuit Boards Location.
- See page 9 for Semiconductor Lead Layouts.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H
[PANEL BOARD]
A MAIN BOARD CN301
CN701
S762 MENU 1
DIGITAL MENU
S763 MENU 2
D782 CURSOR (CONTROL)
S769 (UP)
S770 (RIGHT)
CURSOR CONTROL
S767 (LEFT)
S768 (DOWN)
S761 DIRECT
S745 SLEEP
S744 REC
S741 TIMER SET
S764 P.FILE
S765 DISPLAY
S766 ENTER NEXT
D786
D785
D784
D783
S743 DAILY
S742 ONCE
S740 CLOCK SET
FL701 FLUORESCENT INDICATOR TUBE
IC701
IC741
IC711
S746 KARAOKE PON
S747 EQ
S748 DSP
S749 CANCEL
C701
C702
C703
1-651-840-
11 (11)
MAIN BOARD CN201
B
[POWER BOARD]
CN902
Q901
HP901
C904
C951
Q951
IC901
Q902
D903
D904
D901
D902
D905
D906
F902
F903
CN903
C PIN JACK BOARD CN803
T901 POWER TRANSFORMER
※ NOT REPLACEABLE: BUILT IN TRANSFORMER
CN908
IC971
C972
C955
Q905
D909
D907
D908
R921
1-651-838-
11 (11)
[INLET BOARD]
SW901 VOLTAGE SELECTOR
110-120V
220-240V
CN906
E,MX,AUS,SP MODEL
AEP,UK,G,IT MODEL
CN901 ~AC IN
1-651-839-
11 (11)

- **Semiconductor Location**

Ref. No.	Location
D782	B-3
D783	A-7
D784	A-6
D785	A-5
D786	A-4
D901	F-4
D902	F-4
D903	G-3
D904	G-4
D905	G-4
D906	G-4
D907	H-8
D908	H-10
D909	H-7
IC701	C-6
IC711	C-10
IC741	C-8
IC901	G-2
IC971	G-9
Q731	C-8
Q732	D-7
Q782	C-2
Q783	A-7
Q784	A-6
Q785	A-5
Q786	B-5
Q901	F-1
Q902	G-3
Q905	H-9
Q951	G-1

Note:

- ● : Through hole.
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.
- G : German model.
  IT : Italian model.
  MX : Mexican model.
  SP : Singapore model.
  AUS : Australian model.

3-8. IC PIN FUNCTIONS

- **IC501 SYSTEM CONTROL (HD6433288A21P)**

Pin No.	Pin Name	I/O	Function
1	STDP	I	1024 Hz input (from clock IC IC603 SPC5243)
2	RESET	O	System reset (from FL/LED driver IC701 M38122M2)
3	SUR-A	O	Surround control. Level A
4	SUR-B	O	Surround control. Level B
5	SUR-C	O	Surround control. Level C
6	SUR-D	O	Surround control. Delay
7	–	–	Not used
8	SUR-E	O	Surround control. Mode
9	–	–	Not used
10	–	–	
11	–	–	
12	$\overline{\text{RESET}}$	I	System reset
13	$\overline{\text{NWI}}$	I	To POER DOWN detection circuit
14	Vcc	–	Power supply (+5V)
15	$\overline{\text{STBY}}$	I	Standby (Fixed at L)
16	Vss	–	GND
17	XTAL	O	Oscillator (20 MHz)
18	EXTAL	I	
19	MD1	I	Operation mode setting (Fixed at L)
20	MD0	I	
21	AVss	–	GND
22	KEY0	I	Analog key input
23	KEY1	I	
24	MODE1	I	Destination select input. "H": AEP, UK, G, IT model. "L": E, MX, AUS, SP model
25	MODE2	I	Destination select input. "H": E, MX, AUS, SP model. "L": AEP, UK, G, IT model
26	BPF0	I	Spectrum analyzer BPF analog input
27	BPF1	I	
28	BPF2	I	
29	BPF3	I	
30	AVcc	–	Power supply (+5V)
31	BPF H/L	O	Band selecting spectrum analyzer output
32	AUB OUT	O	AU BUS output
33	AUB IN	I	AU BUS input
34	–	–	Not used
35	–	–	
36	A-SEL0	O	Selecting output of audio input
37	A-SEL1	O	
38	A-SEL2	O	
39	Vcc	–	Power supply (+5V)
40	–	–	Not used

Pin No.	Pin Name	I/O	Function
41	–	–	Not used
42	ANA-PWR	O	Analog power supply ON/OFF output
43	ACK	I	Acknowlege for IC701 M38122M2 (FL/LED driver)
44	DATA	O	Data for IC701 M38122M2 (FL/LED driver)
45	CLK	O	Data shift clock for IC701 M38122M2 (FL/LED driver)
46	FRAME	O	Data frame for IC701 M38122M2 (FL/LED driver)
47	REQ	O	Request for IC701 M38122M2 (FL/LED driver)
48	Vss	–	GND
49	K-PON	O	Karaoke PON ON/OFF
50	$\overline{\text{MUTE}}$	O	Muting output
51	DIRECT	O	Source direct selecting output
52	–	–	Not used
53	–	–	
54	S	O	Chip select for IC470 NJU7305 (Equalizer IC)
55	CLK	O	Shift clock for IC470 NJU7305 (Equalizer IC)
56	DI	O	Data for IC470 NJU7305 (Equalizer IC)
57	SDA	I/O	IC606 AT24C01 (E^2PROM) data
58	SCK	O	IC606 AT24C01 (E^2PROM) clock
59	$\overline{\text{CS1}}$	O	IC603 SPC5243 (Clock IC) chip select 1
60	$\overline{\text{CS0}}$	O	IC603 SPC5243 (Clock IC) chip select 0
61	SO	O	IC603 SPC5243 (Clock IC) read data
62	CLK	O	IC603 SPC5243 (Clock IC) data shift clock
63	$\overline{\text{WR}}$	O	IC603 SPC5243 (Clock IC) write/read selection
64	SI	I	IC603 SPC5243 (Clock IC) write data

- **IC701 FL/LED DRIVER (M38122M2-062FP)**

Pin No.	Pin Name	I/O	Function
1 to 4	LED11 to 08	O	Not used
5	S REQ	I	IC501 HD6433288 (main micon) Request input
6	S ACK	O	IC501 HD6433288 (main micon) Acknowledge output
7	NC	–	Not used
8	S CK	I	IC501 HD6433288 (main micon) Data shift clock input
9	NC	–	Not used
10	S DATA	I	IC501 HD6433288 (main micon) Data input
11 to 15	NC	–	Not used
16	S FRAME	I	IC501 HD6433288 (main micon) Data frame input
17	DIG00	I	Display timming input
18	P DOWN	I	POWER DOWN det input
19	$\overline{\text{RESET}}$	I	System reset
20, 21	NC	–	Not used
22	XIN	I	Clock oscillator (6 MHz)
23	XOUT	O	
24	Vss	–	GND
25	NC	–	Not used
26	FLC DATA	O	IC711 M66004 (FL driver) Data output
27	FLC SCK	O	IC711 M66004 (FL driver) Data shift clock output
28	FLC CS	O	IC711 M66004 (FL driver) Chip select output
29 to 35	NC	–	Not used
36 to 48	SEG47 to 35	O	FL display segment output
49	LED00	O	Not used
50 to 54	LED01 to 05	O	LED output
55, 56	LED06, 07	O	Not used
57	Vcc	–	+5V
58	Vee	–	-30V
59	AVss	–	GND
60	VREF	I	Reference voltage input +5V
61 to 64	LED15 to 12	O	Not used

SECTION 4
EXPLODED VIEWS

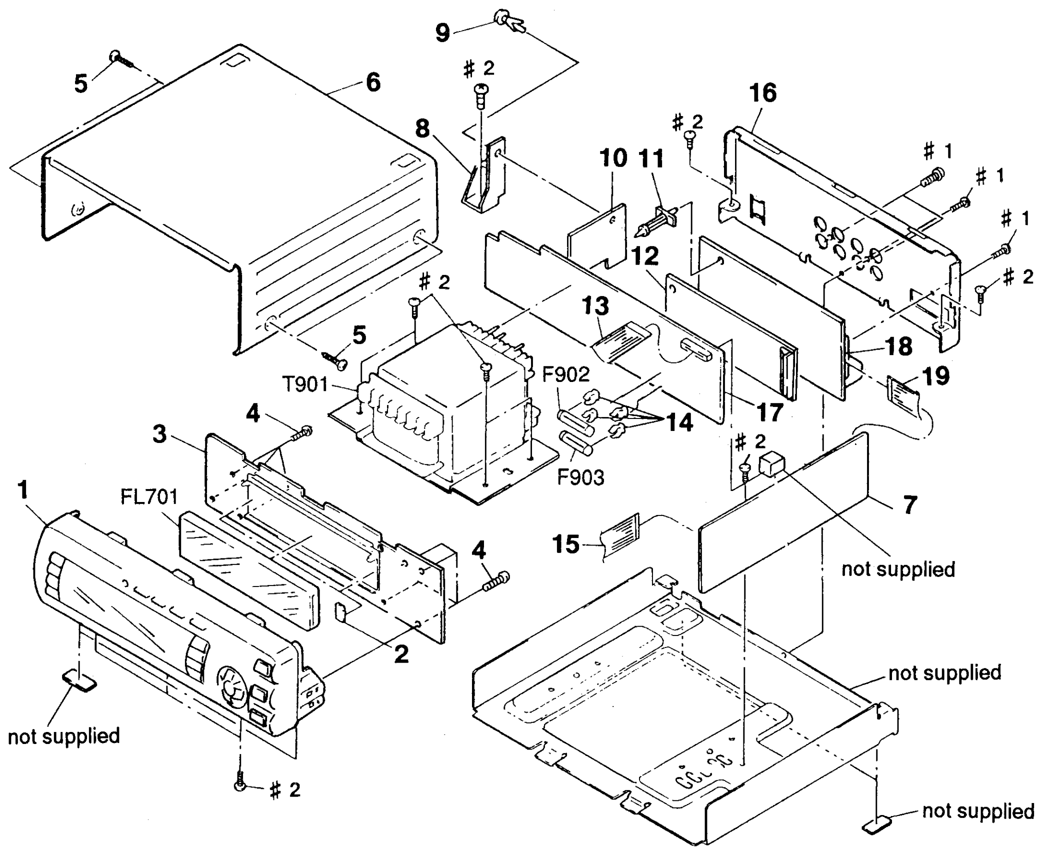
NOTE:

- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviations

G : German model
IT : Italian model
MX : Mexican model
AUS : Australian model
SP : Singapore model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

4-1. MAIN SECTION



Ref. No.	Part No.	Description	Remark
1	X-4944-675-1	PANEL ASSY, FRONT	
∗ 2	4-932-810-21	CUSHION (FL)	
∗ 3	A-4369-525-A	PANEL BOARD, COMPLETE (UK)	
∗ 3	A-4369-531-A	PANEL BOARD, COMPLETE (AEP, E, MX, SP, AUS)	
∗ 3	A-4369-537-A	PANEL BOARD, COMPLETE (G, IT)	
4	4-951-620-01	SCREW (2.6X8), +BVTP	
5	3-363-099-21	SCREW (CASE 3 TP2)	
6	4-961-481-61	CASE	
∗ 7	A-4369-518-A	MAIN BOARD, COMPLETE (E, MX, SP, AUS)	
∗ 7	A-4369-521-A	MAIN BOARD, COMPLETE (UK)	
∗ 7	A-4369-527-A	MAIN BOARD, COMPLETE (AEP)	
∗ 7	A-4369-533-A	MAIN BOARD, COMPLETE (G, IT)	
∗ 8	4-954-242-01	BRACKET (IN)	
9	4-812-134-11	RIVET NYLON, 3.5	
∗ 10	1-651-839-11	INLET BOARD	
11	4-924-098-91	HOLDER, PC BOARD	
∗ 12	A-4369-526-A	REVERB BOARD, COMPLETE (UK)	
∗ 12	A-4369-532-A	REVERB BOARD, COMPLETE (AEP, E, MX, SP, AUS)	
∗ 12	A-4369-538-A	REVERB BOARD, COMPLETE (G, IT)	
13	1-590-035-11	WIRE, FLAT TYPE (11 CORE)	
∗ 14	1-533-213-21	HOLDER, FUSE	
15	1-690-094-11	WIRE, FLAT TYPE (15 CORE)	
∗ 16	4-963-908-11	PANEL, BACK (AEP)	
∗ 16	4-963-908-21	PANEL, BACK (E, MX, SP, AUS)	
∗ 16	4-963-908-31	PANEL, BACK (UK)	
∗ 16	4-963-908-41	PANEL, BACK (IT)	
∗ 16	4-963-908-51	PANEL, BACK (G)	
∗ 17	A-4369-519-A	POWER BOARD, COMPLETE (E, MX, SP, AUS)	
∗ 17	A-4369-523-A	POWER BOARD, COMPLETE (UK)	
∗ 17	A-4369-529-A	POWER BOARD, COMPLETE (AEP)	
∗ 17	A-4369-535-A	POWER BOARD, COMPLETE (G, IT)	
∗ 18	A-4369-522-A	PIN JACK BOARD, COMPLETE (UK)	
∗ 18	A-4369-528-A	PIN JACK BOARD, COMPLETE (AEP, E, MX, SP, AUS)	
∗ 18	A-4369-534-A	PIN JACK BOARD, COMPLETE (G, IT)	
19	1-690-697-11	WIRE (FLAT TYPE) (23 CORE)	
⚠F902	1-532-203-00	FUSE, TIME-LAG (T2.0A)	
⚠F903	1-532-203-00	FUSE, TIME-LAG (T2.0A)	
FL701	1-519-649-11	INDICATOR TUBE, FLUORESCENT	
⚠T901	1-426-693-11	TRANSFORMER, POWER (AEP, G, IT)	
⚠T901	1-426-694-11	TRANSFORMER, POWER (UK)	
⚠T901	1-426-695-11	TRANSFORMER, POWER (E, MX, AUS, SP)	
#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#2	7-682-547-09	SCREW +BVTT 3X6 (S)	

INLET **MAIN**

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Accessories and packing materials are given in the last of this parts list.
- Abbreviations
  G : German model
  IT : Italian model
  MX : Mexican model
  AUS : Australian model
  SP : Singapore model

Ref. No.	Part No.	Description			Remark
*	1-651-839-11	INLET BOARD			
		***********			
		< CONNECTOR >			
⚠CN901	1-526-931-11	INLET, AC (~ AC IN)			
CN906	1-564-321-00	PIN, CONNECTOR 2P (AEP, UK, G, IT)			
CN906	1-564-687-11	PIN, CONNECTOR 3P (E, MX, AUS, SP)			
		< SWITCH >			
⚠SW901	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE			(E, MX, AUS, SP)
**					
*	A-4369-518-A	MAIN BOARD, COMPLETE (E, MX, AUS, SP)			
		**********************************			
*	A-4369-521-A	MAIN BOARD, COMPLETE (UK)			
		*************************			
*	A-4369-527-A	MAIN BOARD, COMPLETE (AEP)			
		**************************			
*	A-4369-533-A	MAIN BOARD, COMPLETE (G, IT)			
		***************************			
		< CAPACITOR >			
C100	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C101	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C102	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C104	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C105	1-126-059-11	ELECT	10uF	20%	50V
C106	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C108	1-124-442-00	ELECT	330uF	20%	6.3V
C109	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C110	1-124-442-00	ELECT	330uF	20%	6.3V
C111	1-124-442-00	ELECT	330uF	20%	6.3V
C154	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C155	1-126-059-11	ELECT	10uF	20%	50V
C156	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C201	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C202	1-126-301-11	ELECT	1uF	20%	50V
C251	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C252	1-126-301-11	ELECT	1uF	20%	50V
C301	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C302	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C303	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C304	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C305	1-163-036-00	CERAMIC CHIP	0.068uF		50V
C306	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C307	1-163-034-00	CERAMIC CHIP	0.033uF		50V
C308	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C309	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C310	1-163-986-00	CERAMIC CHIP	0.027uF	10%	25V
C311	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C312	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C313	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C314	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C315	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C316	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V
C317	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C318	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C320	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C321	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C351	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C352	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C353	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C354	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C355	1-163-036-00	CERAMIC CHIP	0.068uF		50V
C356	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C357	1-163-034-00	CERAMIC CHIP	0.033uF		50V
C358	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C359	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C360	1-163-986-00	CERAMIC CHIP	0.027uF	10%	25V
C361	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C362	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C363	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C364	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C365	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C366	1-163-012-00	CERAMIC CHIP	0.0018uF	10%	50V
C367	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C368	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C404	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C405	1-126-022-11	ELECT	47uF	20%	16V
C406	1-124-587-11	ELECT	220uF	20%	6.3V
C407	1-164-505-11	CERAMIC CHIP	2.2uF		16V

Ref.No.	Part No.	Description	Remark
C408	1-126-163-11	ELECT 4.7uF 20% 50V	
C409	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C501	1-164-346-11	CERAMIC CHIP 1uF 16V	
C502	1-163-222-11	CERAMIC CHIP 5PF 0.25PF 50V	
C503	1-163-222-11	CERAMIC CHIP 5PF 0.25PF 50V	
C505	1-126-059-11	ELECT 10uF 20% 50V	
C506	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C507	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C508	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C509	1-126-154-11	ELECT 47uF 20% 6.3V	
C512	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C513	1-124-443-00	ELECT 100uF 20% 10V	
C514	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C520	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C521	1-163-038-00	CERAMIC CHIP 0.1uF 25V	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
* CN101	1-568-839-11	SOCKET, CONNECTOR 23P	
CN102	1-573-095-21	SOCKET, CONNECTOR 15P	
* CN201	1-568-830-11	SOCKET, CONNECTOR 11P	
* CN301	1-568-834-11	SOCKET, CONNECTOR 15P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D501	8-719-800-76	DIODE 1SS226	
D502	8-719-990-36	DIODE DCA010	
D503	8-719-990-36	DIODE DCA010	
D504	8-719-990-36	DIODE DCA010	

< IC >

Ref.No.	Part No.	Description	Remark
IC101	8-759-636-55	IC M5218AFP	
IC102	8-759-636-55	IC M5218AFP	
IC103	8-759-300-71	IC HD14053BFP	
IC201	8-759-636-55	IC M5218AFP	
IC301	8-759-087-18	IC M5289FP-71NC	
IC351	8-759-087-18	IC M5289FP-71NC	
IC401	8-759-991-11	IC XR1091DCP	
IC470	8-759-081-01	IC NJU7305L	
IC501	8-759-259-01	IC HD6433288A21P	
IC502	8-759-300-71	IC HD14053BFP	
IC503	8-759-165-81	IC PST600D	
IC504	8-759-165-88	IC PST600K	
IC505	8-759-082-94	IC SPC5243MOB	
IC506	8-759-248-66	IC AT24C01-10PC	

< JUMPER RESISTOR >

Ref.No.	Part No.	Description	Remark
JR5	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR6	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR7	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR8	1-216-295-00	METAL CHIP 0 5% 1/10W	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q502	8-729-805-43	TRANSISTOR 2SC3396	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R101	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R102	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R103	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R104	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R105	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R106	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R107	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R108	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R109	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R156	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R157	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R158	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R159	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R201	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R202	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R203	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R204	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R205	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R206	1-216-025-00	METAL CHIP 100 5% 1/10W	
R207	1-216-025-00	METAL CHIP 100 5% 1/10W	
R208	1-216-025-00	METAL CHIP 100 5% 1/10W	
R209	1-216-025-00	METAL CHIP 100 5% 1/10W	
R305	1-216-070-00	METAL CHIP 7.5K 5% 1/10W	
R306	1-216-070-00	METAL CHIP 7.5K 5% 1/10W	
R307	1-216-070-00	METAL CHIP 7.5K 5% 1/10W	
R308	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R309	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R310	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R311	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R312	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R313	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R314	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R357	1-216-070-00	METAL CHIP 7.5K 5% 1/10W	
R358	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R359	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R360	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R361	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R362	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R363	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R364	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R403	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R404	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R453	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R454	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R455	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	

MAIN PANEL

Ref. No.	Part No.	Description			Remark
R501	1-216-049-00	METAL CHIP	1K	5%	1/10W (AEP, UK, G, IT)
R502	1-216-049-00	METAL CHIP	1K	5%	1/10W (E, MX, AUS, SP)
R503	1-216-049-00	METAL CHIP	1K	5%	1/10W (E, MX, AUS, SP)
R504	1-216-049-00	METAL CHIP	1K	5%	1/10W (AEP, UK, G, IT)
R505	1-216-025-00	METAL CHIP	100	5%	1/10W
R506	1-216-025-00	METAL CHIP	100	5%	1/10W
R507	1-216-073-00	METAL CHIP	10K	5%	1/10W
R508	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R509	1-216-073-00	METAL CHIP	10K	5%	1/10W
R510	1-216-001-00	METAL CHIP	10	5%	1/10W
R511	1-216-049-00	METAL CHIP	1K	5%	1/10W
R512	1-216-089-91	METAL GLAZE	47K	5%	1/10W
R513	1-216-025-00	METAL CHIP	100	5%	1/10W
R514	1-216-073-00	METAL CHIP	10K	5%	1/10W
R515	1-216-097-00	METAL CHIP	100K	5%	1/10W
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W
R517	1-216-041-00	METAL CHIP	470	5%	1/10W
R518	1-216-097-00	METAL CHIP	100K	5%	1/10W
R519	1-216-097-00	METAL CHIP	100K	5%	1/10W
R520	1-216-049-00	METAL CHIP	1K	5%	1/10W
R521	1-216-025-00	METAL CHIP	100	5%	1/10W
R522	1-216-025-00	METAL CHIP	100	5%	1/10W
R523	1-216-025-00	METAL CHIP	100	5%	1/10W
R524	1-216-025-00	METAL CHIP	100	5%	1/10W
R525	1-216-025-00	METAL CHIP	100	5%	1/10W
R526	1-216-025-00	METAL CHIP	100	5%	1/10W
R527	1-216-025-00	METAL CHIP	100	5%	1/10W
R528	1-216-025-00	METAL CHIP	100	5%	1/10W
R529	1-216-025-00	METAL CHIP	100	5%	1/10W
R530	1-216-025-00	METAL CHIP	100	5%	1/10W
R531	1-216-025-00	METAL CHIP	100	5%	1/10W
R532	1-216-025-00	METAL CHIP	100	5%	1/10W
R533	1-216-025-00	METAL CHIP	100	5%	1/10W

< VIBRATOR >

Ref. No.	Part No.	Description
X501	1-567-928-11	VIBLATOR, CERAMIC (20MHz)
X502	1-579-258-21	VIBRATOR, CRYSTAL (32.768kHz)

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Ref. No.	Part No.	Description	Remark
*	A-4369-525-A	PANEL BOARD, COMPLETE (UK) **************************	
*	A-4369-531-A	PANEL BOARD, COMPLETE (AEP, E, MX, AUS, SP) ***************************************	
*	A-4369-537-A	PANEL BOARD, COMPLETE (G, IT) ****************************	
*	4-932-810-11	CUSHION (FL)	

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C701	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C702	1-124-584-00	ELECT	100uF	20%	10V
C703	1-124-261-00	ELECT	10uF	20%	50V
C704	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C705	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C711	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C712	1-124-584-00	ELECT	100uF	20%	10V
C713	1-124-261-00	ELECT	10uF	20%	50V
C714	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C715	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C720	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C721	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C722	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C723	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C724	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C725	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C726	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C727	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C728	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C729	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C730	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C731	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C732	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C733	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C734	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C735	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C741	1-164-346-11	CERAMIC CHIP	1uF		16V
C781	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C788	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C789	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C790	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C791	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C792	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C793	1-124-261-00	ELECT	10uF	20%	50V

< CONNECTOR >

Ref. No.	Part No.	Description
* CN701	1-568-834-11	SOCKET, CONNECTOR 15P

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D782	8-719-313-43	SEL2210S-TH10 (CURSOR CONTROL)	
D783	8-719-032-87	DIODE SEL5420S (ONCE)	
D784	8-719-032-87	DIODE SEL5420S (DAILY)	
D785	8-719-032-83	DIODE SEL5220S (REC)	
D786	8-719-032-87	DIODE SEL5420S (SLEEP)	
		< FLUORESCENT INDICATOR >	
FL701	1-519-649-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC701	8-759-192-74	IC M38122M2-062FP	
IC711	8-759-254-76	IC M66004M4FP	
IC741	8-759-926-20	IC SN74HC160NS	
		< COIL >	
L701	1-410-393-11	INDUCTOR CHIP 100uH	
L711	1-410-393-11	INDUCTOR CHIP 100uH	
		< TRANSISTOR >	
Q731	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q732	8-729-600-22	TRANSISTOR 2SA1235-F	
Q782	8-729-805-41	TRANSISTOR 2SC3398	
Q783	8-729-805-41	TRANSISTOR 2SC3398	
Q784	8-729-805-41	TRANSISTOR 2SC3398	
Q785	8-729-805-41	TRANSISTOR 2SC3398	
Q786	8-729-805-41	TRANSISTOR 2SC3398	
		< RESISTOR >	
R711	1-216-025-00	METAL CHIP 100 5% 1/10W	
R712	1-216-025-00	METAL CHIP 100 5% 1/10W	
R713	1-216-025-00	METAL CHIP 100 5% 1/10W	
R714	1-216-025-00	METAL CHIP 100 5% 1/10W	
R715	1-216-025-00	METAL CHIP 100 5% 1/10W	
R716	1-216-025-00	METAL CHIP 100 5% 1/10W	
R717	1-216-025-00	METAL CHIP 100 5% 1/10W	
R731	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R732	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R733	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R734	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R735	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R736	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R740	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R741	1-216-025-00	METAL CHIP 100 5% 1/10W	
R742	1-216-027-00	METAL CHIP 120 5% 1/10W	
R743	1-216-027-00	METAL CHIP 120 5% 1/10W	
R744	1-216-029-00	METAL CHIP 150 5% 1/10W	
R745	1-216-045-00	METAL CHIP 680 5% 1/10W	
R746	1-216-037-00	METAL CHIP 330 5% 1/10W	
R747	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R748	1-216-047-00	METAL CHIP 820 5% 1/10W	
R749	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R760	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R761	1-216-025-00	METAL CHIP 100 5% 1/10W	
R762	1-216-027-00	METAL CHIP 120 5% 1/10W	
R763	1-216-027-00	METAL CHIP 120 5% 1/10W	
R764	1-216-029-00	METAL CHIP 150 5% 1/10W	
R765	1-216-045-00	METAL CHIP 680 5% 1/10W	
R766	1-216-037-00	METAL CHIP 330 5% 1/10W	
R767	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R768	1-216-047-00	METAL CHIP 820 5% 1/10W	
R769	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R770	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R782	1-216-033-00	METAL CHIP 220 5% 1/10W	
R783	1-216-027-00	METAL CHIP 120 5% 1/10W	
R784	1-216-027-00	METAL CHIP 120 5% 1/10W	
R785	1-216-033-00	METAL CHIP 220 5% 1/10W	
R786	1-216-027-00	METAL CHIP 120 5% 1/10W	
		< SWITCH >	
S740	1-554-303-21	SWITCH, TACTILE (CLOCK SET)	
S741	1-554-303-21	SWITCH, TACTILE (TIMER SET)	
S742	1-554-303-21	SWITCH, TACTILE (ONCE)	
S743	1-554-303-21	SWITCH, TACTILE (DAILY)	
S744	1-554-303-21	SWITCH, TACTILE (REC)	
S745	1-554-303-21	SWITCH, TACTILE (SLEEP)	
S746	1-554-303-21	SWITCH, TACTILE (KARAOKE PON)	
S747	1-554-303-21	SWITCH, TACTILE (EQ)	
S748	1-554-303-21	SWITCH, TACTILE (DSP)	
S749	1-554-303-21	SWITCH, TACTILE (CANCEL)	
S761	1-554-303-21	SWITCH, TACTILE (DIRECT)	
S762	1-554-303-21	SWITCH, TACTILE (MENU 1)	
S763	1-554-303-21	SWITCH, TACTILE (MENU 2)	
S764	1-554-303-21	SWITCH, TACTILE (P.FILE)	
S765	1-554-303-21	SWITCH, TACTILE (DISPLAY)	
S766	1-554-303-21	SWITCH, TACTILE (ENTER/NEXT)	
S767	1-554-303-21	SWITCH, TACTILE (LEFT)	
S768	1-554-303-21	SWITCH, TACTILE (DOWN)	
S769	1-554-303-21	SWITCH, TACTILE (UP)	
S770	1-554-303-21	SWITCH, TACTILE (RIGHT)	
		< VIBRATOR >	
X701	1-577-360-11	VIBRATOR, CERAMIC (6kHz)	

****

PIN JACK

Ref. No.	Part No.	Description	Remark
*	A-4369-522-A	PIN JACK BOARD, COMPLETE (UK)	
		*****************************	
*	A-4369-528-A	PIN JACK BOARD, COMPLETE (AEP, E, MX, AUS, SP)	
		***************************************	
*	A-4369-534-A	PIN JACK BOARD, COMPLETE (G, IT)	
		*******************************	
		< CAPACITOR >	
C802	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C803	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C804	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C805	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C806	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C807	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C810	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C811	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C812	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C813	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C815	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C816	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C817	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C818	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C819	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C820	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C821	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C822	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C823	1-126-022-11	ELECT 47uF 20% 16V	
C824	1-126-022-11	ELECT 47uF 20% 16V	
C825	1-126-049-11	ELECT 22uF 20% 25V	
C826	1-126-161-11	ELECT 2.2uF 20% 50V	
C827	1-126-049-11	ELECT 22uF 20% 25V	
C828	1-126-161-11	ELECT 2.2uF 20% 50V	
C829	1-126-049-11	ELECT 22uF 20% 25V	
C830	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C831	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C863	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C871	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C872	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C873	1-126-163-11	ELECT 4.7uF 20% 50V	
C874	1-163-018-00	CERAMIC CHIP 0.0056uF 5% 50V	
C875	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C876	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C877	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C878	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C879	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C881	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C882	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C883	1-126-163-11	ELECT 4.7uF 20% 50V	
C884	1-163-018-00	CERAMIC CHIP 0.0056uF 5% 50V	
C885	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C886	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C887	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
		< CONNECTOR >	
CN801	1-580-740-31	SOCKET, CONNECTOR 17P (SYSTEM CONTROL)	
* CN802	1-568-865-11	SOCKET, CONNECTOR 23P	
		< DIODE >	
D801	8-719-800-76	DIODE 1SS226	
D802	8-719-800-76	DIODE 1SS226	
		< IC >	
IC801	8-759-009-06	IC MC14052BF	
IC802	8-759-009-06	IC MC14052BF	
IC803	8-759-009-06	IC MC14052BF	
IC804	8-759-636-55	IC M5218AFP	
IC871	8-759-636-55	IC M5218AFP	
		< JACK >	
J801	1-565-304-41	JACK, PIN 4P (VIDEO, MD/DAT IN)	
J802	1-565-304-41	JACK, PIN 4P (PHONO IN, MD/DAT OUT)	
		< TRANSISTOR >	
Q801	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q802	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q803	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q804	8-729-107-46	TRANSISTOR 2SC3624A-L15	
Q805	8-729-805-65	TRANSISTOR 2SA1344	
		< RESISTOR >	
R802	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R803	1-216-086-00	METAL GLAZE 36K 5% 1/10W	
R804	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R805	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R806	1-216-086-00	METAL GLAZE 36K 5% 1/10W	
R807	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R810	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R811	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R812	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R813	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R814	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R815	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R818	1-216-041-00	METAL CHIP 470 5% 1/10W	
R821	1-216-041-00	METAL CHIP 470 5% 1/10W	
R824	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R827	1-216-115-00	METAL CHIP 560K 5% 1/10W	
R829	1-216-025-00	METAL CHIP 100 5% 1/10W	
R830	1-216-025-00	METAL CHIP 100 5% 1/10W	
R832	1-216-049-00	METAL CHIP 1K 5% 1/10W	

Ref. No.	Part No.	Description				Remark
R835	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R839	1-216-025-00	METAL CHIP	100	5%	1/10W	
R840	1-216-025-00	METAL CHIP	100	5%	1/10W	
R841	1-216-025-00	METAL CHIP	100	5%	1/10W	
R842	1-216-025-00	METAL CHIP	100	5%	1/10W	
R846	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R847	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R848	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R849	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R850	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R851	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R852	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R853	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R854	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R855	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R856	1-216-025-00	METAL CHIP	100	5%	1/10W	
R871	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R872	1-216-045-00	METAL CHIP	680	5%	1/10W	
R873	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R874	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R875	1-216-001-00	METAL CHIP	10	5%	1/10W	
R876	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R881	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R882	1-216-045-00	METAL CHIP	680	5%	1/10W	
R883	1-216-115-00	METAL CHIP	560K	5%	1/10W	
R884	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R885	1-216-001-00	METAL CHIP	10	5%	1/10W	
R886	1-216-097-00	METAL CHIP	100K	5%	1/10W	

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Ref. No.	Part No.	Description
*	A-4369-519-A	POWER BOARD, COMPLETE (E, MX, AUS, SP) ************************************
*	A-4369-523-A	POWER BOARD, COMPLETE (UK) **************************
*	A-4369-529-A	POWER BOARD, COMPLETE (AEP) ***************************
*	A-4369-535-A	POWER BOARD, COMPLETE (G, IT) ****************************

< CAPACITOR >

Ref. No.	Part No.	Description				Remark
C901	1-126-027-11	ELECT	1000uF	20%	25V	
C903	1-164-346-11	CERAMIC CHIP	1uF		16V	
C904	1-124-360-00	ELECT	1000uF	20%	16V	
C905	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C906	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C907	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C908	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V	
C951	1-126-027-11	ELECT	1000uF	20%	25V	
C954	1-124-360-00	ELECT	1000uF	20%	16V	
C955	1-124-962-11	ELECT	2200uF	20%	25V	
C962	1-124-910-11	ELECT	47uF	20%	50V	
C963	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C964	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C965	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C966	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C967	1-126-059-11	ELECT	10uF	20%	50V	
C971	1-165-319-11	CERAMIC CHIP	0.1uF		50V	
C972	1-126-059-11	ELECT	10uF	20%	50V	
C973	1-165-319-11	CERAMIC CHIP	0.1uF		50V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN902	1-568-830-11	SOCKET, CONNECTOR 11P	
* CN903	1-573-273-11	PIN, CONNECTOR 3P	
CN908	1-751-217-21	LEAD (WITH CONNECTOR) (3 CORE)	(E, MX, AUS, SP)
CN908	1-751-325-21	LEAD (WITH CONNECTOR) (2)	(AEP, UK, G, IT)

< DIODE >

Ref. No.	Part No.	Description	
D901	8-719-200-02	DIODE	10E2
D902	8-719-200-02	DIODE	10E2
D903	8-719-200-02	DIODE	10E2
D904	8-719-200-02	DIODE	10E2
D905	8-719-200-02	DIODE	10E2
D906	8-719-200-02	DIODE	10E2
D907	8-719-200-02	DIODE	10E2
D908	8-719-016-02	DIODE	UZP-30B
D909	8-719-014-56	DIODE	UZP-5.1B

< FUSE >

Ref. No.	Part No.	Description
⚠F902	1-532-203-00	FUSE, TIME-LAG (T2.0A)
⚠F903	1-532-203-00	FUSE, TIME-LAG (T2.0A)

< FUSE HOLDER >

Ref. No.	Part No.	Description
* FH903	1-533-213-31	HOLDER, FUSE
* FH904	1-533-213-31	HOLDER, FUSE
* FH913	1-533-213-31	HOLDER, FUSE
* FH914	1-533-213-31	HOLDER, FUSE

< IC >

Ref. No.	Part No.	Description	
IC901	8-759-602-66	IC	M5230L-A
IC971	8-759-231-53	IC	TA7805S

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q901	8-729-018-59	TRANSISTOR	2SB1375-LC
Q902	8-729-805-41	TRANSISTOR	2SC3398
Q905	8-729-018-59	TRANSISTOR	2SB1375-LC
Q951	8-729-018-60	TRANSISTOR	2SD2012-LC

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

POWER REVERB

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R901	1-216-033-00	METAL CHIP	220	5%	1/10W	
R903	1-216-043-00	METAL CHIP	560	5%	1/10W	
R904	1-216-043-00	METAL CHIP	560	5%	1/10W	
R905	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R906	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R907	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R908	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R909	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R910	1-216-033-00	METAL CHIP	220	5%	1/10W	
R911	1-216-033-00	METAL CHIP	220	5%	1/10W	
R912	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R913	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R916	1-216-097-00	METAL CHIP	100K	5%	1/10W	
⚠R919	1-219-139-11	FUSIBLE	0.68	5%	1/4W	F
⚠R920	1-219-139-11	FUSIBLE	0.68	5%	1/4W	F
⚠R921	1-212-865-00	FUSIBLE	22	5%	1/4W	F
R922	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R951	1-216-033-00	METAL CHIP	220	5%	1/10W	

< TRANSFORMER >

Ref. No.	Part No.	Description
⚠T901	1-426-693-11	TRANSFORMER, POWER (AEP,G,IT)
⚠T901	1-426-694-11	TRANSFORMER, POWER (UK)
⚠T901	1-426-695-11	TRANSFORMER, POWER (E,MX,AUS,SP)

< THERMISTOR(POSITIVE) >

Ref. No.	Part No.	Description
THP901	1-806-882-11	THERMISTOR, POSITIVE
THP951	1-806-882-11	THERMISTOR, POSITIVE

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*	A-4369-526-A	REVERB BOARD, COMPLETE (UK)

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*	A-4369-532-A	REVERB BOARD, COMPLETE (AEP,E,MX,AUS,SP)

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*	A-4369-538-A	REVERB BOARD, COMPLETE (G,IT)

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< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C601	1-124-443-00	ELECT	100uF	20%	10V
C602	1-124-443-00	ELECT	100uF	20%	10V
C603	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C604	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C605	1-124-443-00	ELECT	100uF	20%	10V
C606	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C607	1-136-173-00	FILM	0.47uF	5%	50V
C608	1-163-018-00	CERAMIC CHIP	0.0056uF	5%	50V
C609	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C610	1-136-173-00	FILM	0.47uF	5%	50V
C611	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C612	1-136-161-00	FILM	0.047uF	5%	50V
C613	1-136-161-00	FILM	0.047uF	5%	50V
C614	1-136-161-00	FILM	0.047uF	5%	50V
C615	1-136-171-00	FILM	0.33uF	5%	50V
C616	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C617	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C618	1-136-171-00	FILM	0.33uF	5%	50V
C619	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C620	1-136-171-00	FILM	0.33uF	5%	50V
C621	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C622	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C623	1-124-443-00	ELECT	100uF	20%	10V
C624	1-126-022-11	ELECT	47uF	20%	10V
C625	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C626	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C627	1-124-443-00	ELECT	100uF	20%	10V
C628	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C629	1-136-171-00	FILM	0.33uF	5%	50V
C630	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C631	1-136-171-00	FILM	0.33uF	5%	50V
C632	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C633	1-136-173-00	FILM	0.47uF	5%	50V
C634	1-136-173-00	FILM	0.47uF	5%	50V
C635	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C636	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C637	1-163-006-11	CERAMIC CHIP	560PF	10%	50V
C638	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C639	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C640	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C641	1-136-173-00	FILM	0.47uF	5%	50V
C642	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C643	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C644	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C645	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C646	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C647	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C648	1-136-171-00	FILM	0.33uF	5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description
CN601	1-573-109-11	PIN, CONNECTOR 15P

< IC >

Ref. No.	Part No.	Description	
IC202	8-759-009-06	IC	MC14052BF
IC203	8-759-636-55	IC	M5218AFP
IC204	8-759-636-55	IC	M5218AFP
IC205	8-759-636-55	IC	M5218AFP
IC601	8-759-259-14	IC	M65841SP

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
		< RESISTOR >				
R601	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R602	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R603	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R604	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R605	1-216-060-00	METAL GLAZE	3K	5%	1/10W	
R606	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R607	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R608	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R609	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R610	1-216-094-00	METAL GLAZE	75K	5%	1/10W	
R611	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R612	1-216-094-00	METAL GLAZE	75K	5%	1/10W	
R613	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R614	1-216-094-00	METAL GLAZE	75K	5%	1/10W	
R615	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R616	1-216-094-00	METAL GLAZE	75K	5%	1/10W	
R617	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R619	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R620	1-216-094-00	METAL GLAZE	75K	5%	1/10W	
R621	1-216-070-00	METAL CHIP	7.5K	5%	1/10W	
R622	1-216-094-00	METAL GLAZE	75K	5%	1/10W	
R623	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R624	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R625	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R626	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R627	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R628	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R629	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R630	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R631	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R632	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R633	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R634	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R635	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R636	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R637	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R638	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R639	1-216-089-91	METAL GLAZE	47K	5%	1/10W	
R640	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R641	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R642	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R643	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R644	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R645	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R646	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R648	1-216-013-00	METAL CHIP	33	5%	1/10W	

Ref. No.	Part No.	Description	Remark
		< VIBRATOR >	
X201	1-567-192-11	OSCILLATOR, CERAMIC (4MHz)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
13	1-590-035-11	WIRE, FLAT TYPE (11 CORE)	
* 14	1-533-213-21	HOLDER, FUSE	
15	1-690-094-11	WIRE, FLAT TYPE (15 CORE)	
19	1-690-697-11	WIRE (FLAT TYPE) (23 CORE)	
⚠F902	1-532-203-00	FUSE, TIME-LAG (T2.0A)	
⚠F903	1-532-203-00	FUSE, TIME-LAG (T2.0A)	
FL701	1-519-649-11	INDICATOR TUBE, FLUORESCENT	
⚠T901	1-426-693-11	TRANSFORMER, POWER (AEP, G, IT)	
⚠T901	1-426-694-11	TRANSFORMER, POWER (UK)	
⚠T901	1-426-695-11	TRANSFORMER, POWER (E, MX, AUS, SP)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Quality Engineering Dept.

Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

9-959-522-11

TC-H4900

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model

TC-H4900 is the Stereo cassette
deck section in MHC-4900/E80X

Model Name Using Similer Mechanism		TC-H7900
Tape Transport Mechanism Type	DECK–A	TCM-190RA12AL
	DECK–B	TCM-190RB12AL

SPECIFICATIONS

Recording system
4-track 2-channel stereo
Frequency response
(DOLBY NR OFF)
40 – 13,000 Hz (±3 dB),
using Sony TYPE I cassette
40 – 14,000 Hz (±3 dB),
using Sony TYPE II cassette
40 – 15,000 Hz (±3 dB), using
Sony TYPE IV cassette
Wow and flutter
0.1% WRMS ±0.3% (DIN)
Dimensions
Approx. 225 x 125 x 230 mm (w/h/d)
(8 7/8 x 5 x 9 1/8 inches)
Mass: Approx. 2.9 kg
(6 lb 7 oz)

Design and specifications subject to change without notice.

* Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol ꟷ and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

STEREO CASSETTE DECK

SONY®

SERVICE NOTE

- **Power Supply Used in Servicing**
  This unit does not have its own power supply. As it works on the power supplied from the amplifier (TA-H4900) and equalizer (SEQ-H4900) used for this series, connect this amplifier when servicing the unit (conduction repair, etc.).

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

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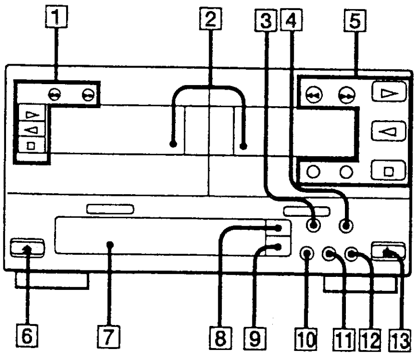
SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
GENERAL

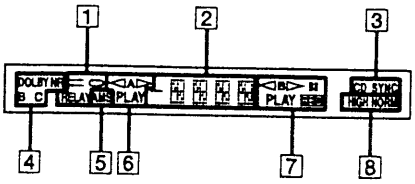
This section is extracted from instruction manual.

Front panel



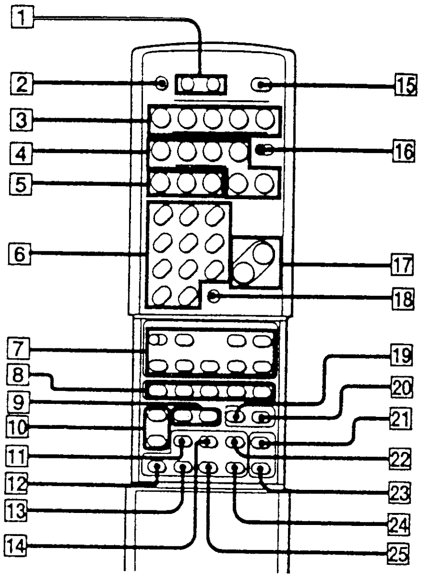
- 1 Tape operating buttons (for deck A)
  - ▷ (front side play) (14)
  - ◁ (reverse side play) (14)
  - □ (stop) (14)
  - ▶▶ (fast rightward and AMS**) (14)
  - ◀◀ (fast leftward and AMS**) (14)
- 2 Cassette compartments (14)
- 3 CD SYNCHRO button (15)
- 4 DUBBING MODE button (19)
- 5 Tape operating buttons (for deck B)
  - ▷ (front side play) (14)
  - ◁ (reverse side play) (14)
  - □ (stop) (14)
  - ▶▶ (fast rightward and AMS**) (14)
  - ◀◀ (fast leftward and AMS**) (14)
  - ● REC (recording) (16)
  - ❙❙ PAUSE (14)
  - **AMS: Automatic Music Sensor (14)
- 6 ≙ button (for deck A) (14)
- 7 Display window (16)
- 8 COUNTER A/B button (15)
- 9 RESET button (15)
- 10 DOLBY NR button (15)
- 11 DIRECTION MODE button (14)
- 12 O MUTE button (16)
- 13 ≙ button (for deck B) (14)

Display window



- 1 Direction mode indication (14)
- 2 Tape counter indication (16)
- 3 CD SYNC (synchro) indication (15)
- 4 Dolby NR indication (15)
- 5 AMS mode indication (14)
- 6 Deck A status indication (16)
- 7 Deck B status indication (16)
- 8 Dubbing mode indication (19)

Remote commander (RM-S49, RM-S49E)



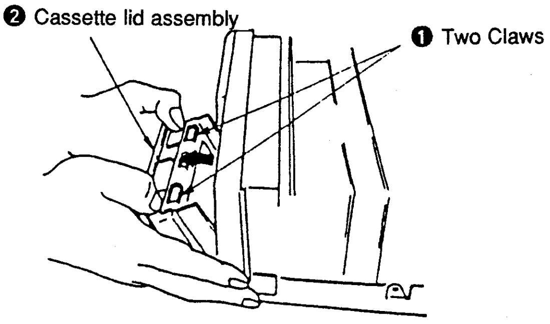
- 1 TAPE DECK A/B buttons (14)
- 2 SLEEP button (23)
- 3 CD/MD operating buttons (7)
- 4 Cassette deck operating buttons (14)
- 5 Tuner operating buttons (10)
- 6 CD/Tuner/numeric buttons (7, 11)
- 7 VCR operating buttons (26)
- 8 TV operating buttons (26)
- 9 MENU 1, 2 button (15, 20)
- 10 FUNCTION </> buttons (16, 25, 26)
- 11 CONTINUE button (8)
- 12 CHECK button (9)
- 13 CLEAR button (9)
- 14 SHUFFLE button (8)
- 15 SYSTEM POWER switch (7)
- 16 CD/MD switch (7)
- 17 VOLUME +/− buttons (7, 20)
- 18 MUTING button (20)
- 19 P.FILE button (22)
- 20 DIRECT button (15, 21)
- 21 RDS EON button (22)
  (AEP, UK, G model) (RM-S49)
- 21 REC button (22) (E, AUS model) (RM-S49E)
- 22 PROGRAM button (8)
- 23 DISPLAY button (21)
  (AEP, UK, G model) (RM-S49)
- 23 REC MUTE button (21) (E, AUS model) (RM-S49E)
- 24 TIME button (8)
- 25 REPEAT button (9)

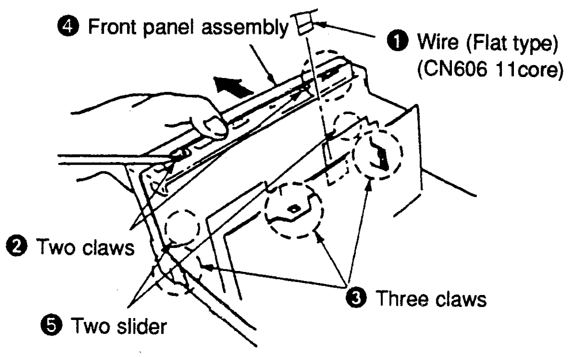
SECTION 2

DISASSEMBLY

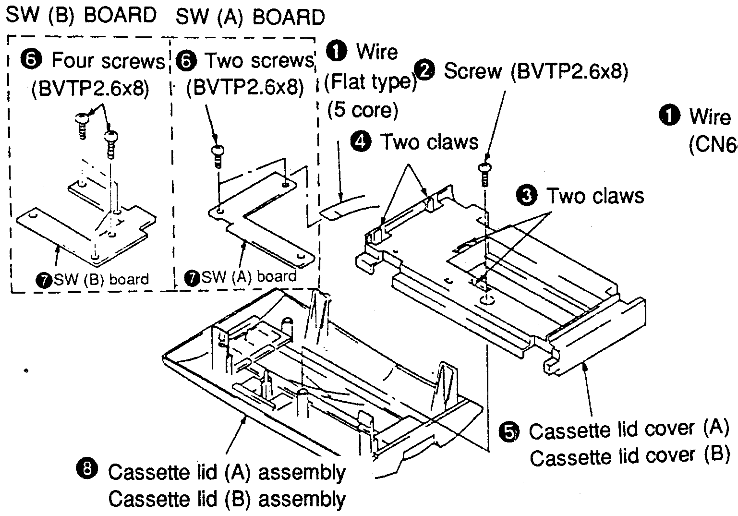
Note : Follow the disassembly procedurein numerical order given.

[FRONT PANEL ASSEMBLY]

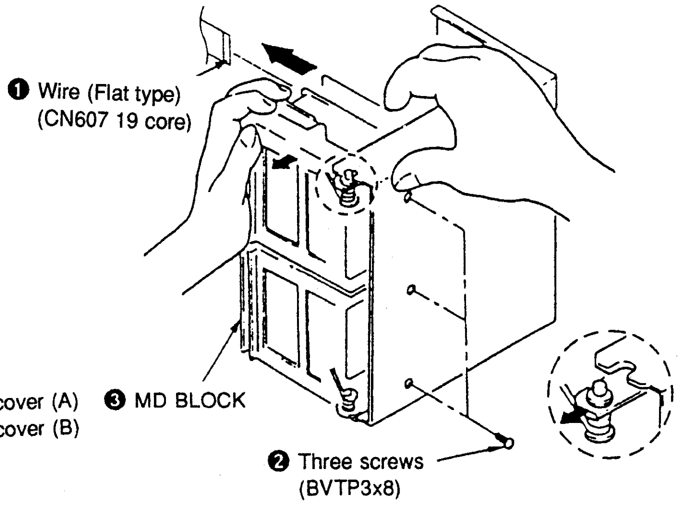

❷ Cassette lid assembly
❶ Two Claws


❹ Front panel assembly
❶ Wire (Flat type) (CN606 11core)
❷ Two claws
❸ Three claws
❺ Two slider

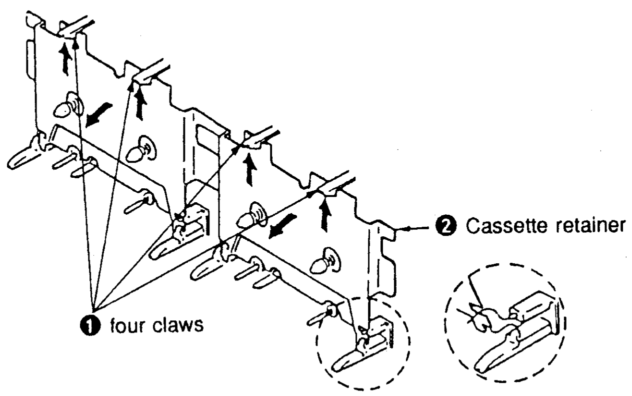
[SW (A), (B) BOARD]


SW (B) BOARD
SW (A) BOARD
❻ Four screws (BVTP2.6x8)
❻ Two screws (BVTP2.6x8)
❶ Wire (Flat type) (5 core)
❷ Screw (BVTP2.6x8)
❹ Two claws
❸ Two claws
❼SW (B) board
❼SW (A) board
❺ Cassette lid cover (A) Cassette lid cover (B)
❽ Cassette lid (A) assembly Cassette lid (B) assembly

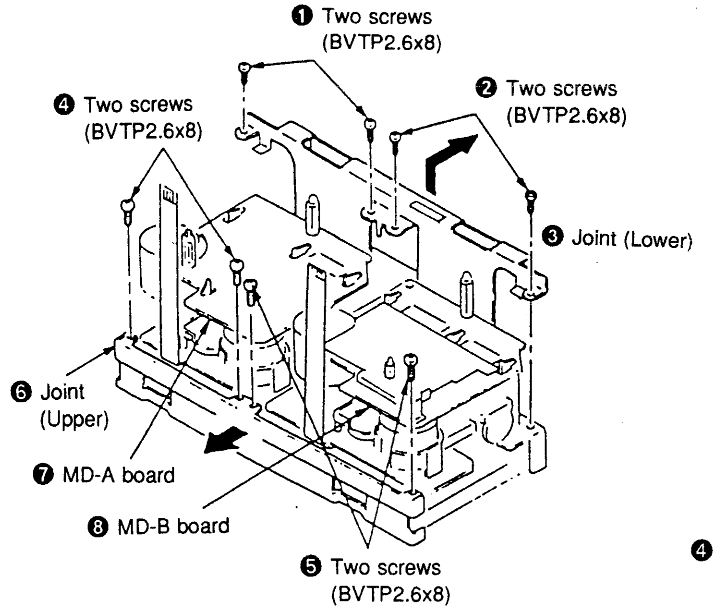
[MD BLOCK]


❶ Wire (Flat type) (CN607 19 core)
❸ MD BLOCK
❷ Three screws (BVTP3x8)

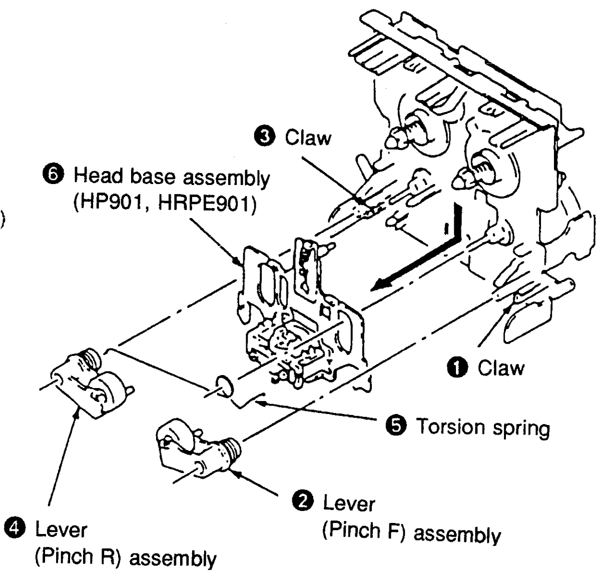
[CASSETTE RETAINER]


❷ Cassette retainer
❶ four claws

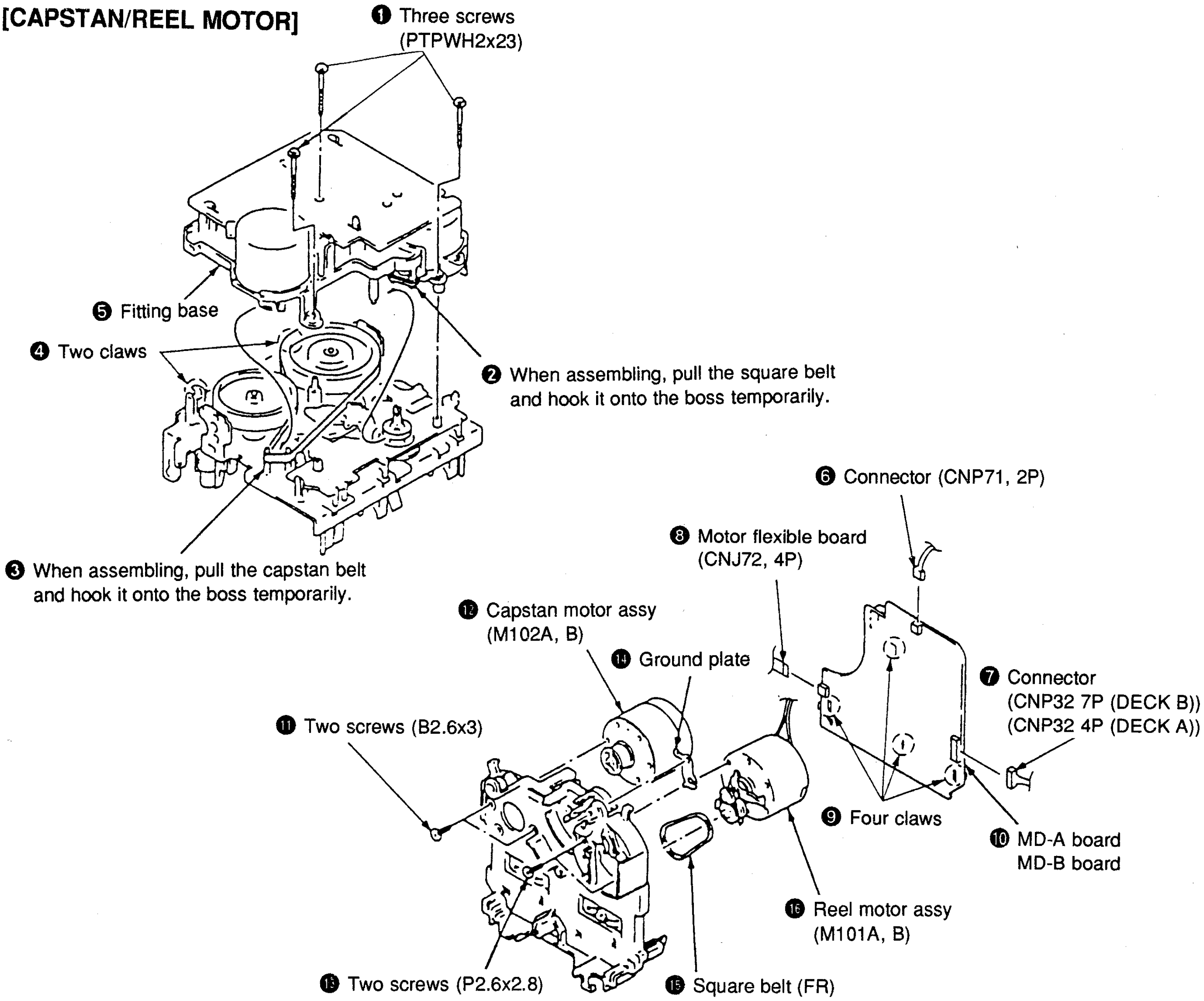
[MECHANISM DECK]


❶ Two screws
(BVTP2.6x8)
❹ Two screws
(BVTP2.6x8)
❷ Two screws
(BVTP2.6x8)
❸ Joint (Lower)
❻ Joint
(Upper)
❼ MD-A board
❽ MD-B board
❺ Two screws
(BVTP2.6x8)

[HEAD BASE ASSEMBLY]


❸ Claw
❻ Head base assembly
(HP901, HRPE901)
❶ Claw
❺ Torsion spring
❷ Lever
(Pinch F) assembly
❹ Lever
(Pinch R) assembly

[CAPSTAN/REEL MOTOR]


❶ Three screws
(PTPWH2x23)
❺ Fitting base
❹ Two claws
❷ When assembling, pull the square belt
and hook it onto the boss temporarily.
❸ When assembling, pull the capstan belt
and hook it onto the boss temporarily.
❻ Connector (CNP71, 2P)
❽ Motor flexible board
(CNJ72, 4P)
⓭ Capstan motor assy
(M102A, B)
⓮ Ground plate
⓫ Two screws (B2.6x3)
❼ Connector
(CNP32 7P (DECK B))
(CNP32 4P (DECK A))
❾ Four claws
❿ MD-A board
MD-B board
⓰ Reel motor assy
(M101A, B)
⓬ Two screws (P2.6x2.8)
⓯ Square belt (FR)

SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab :

record/playback head	pinch roller
erase head	rubber belt
capstan	idler

2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustment, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

• Torque Measurement

Torque	Torque meter	Meter reading
FWD	CQ-102C	30 to 65 g • cm (0.42 — 0.90 oz • inch)
FWD Back tension	CQ-102RC	1 to 6 g • cm (0.14 to 0.08 oz • inch)
FF/ REW	CQ-201B	70 to 120 g • cm (0.98 to 1.67 oz • inch)

SECTION 4
ELECTRICAL ADJUSTMENTS

1. The adjustment should be peromed in the publication. (Be sure to make playback adjustment at first.)
2. The adjustment and measurement should be performed for both L-CH and R-CH.
   - Switch position
     DOLBY NR switch : OFF

• Test Tape

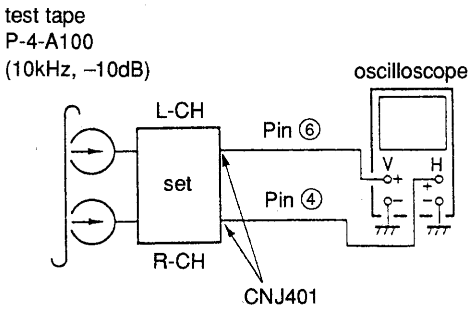
Tape	Contents	Used for
P-4-A100	10kH , -10dB	Head Azimuth Adjustment
P-4-L300	315Hz, 0dB	Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

Record/ Playback Head Azimuth Adjustment

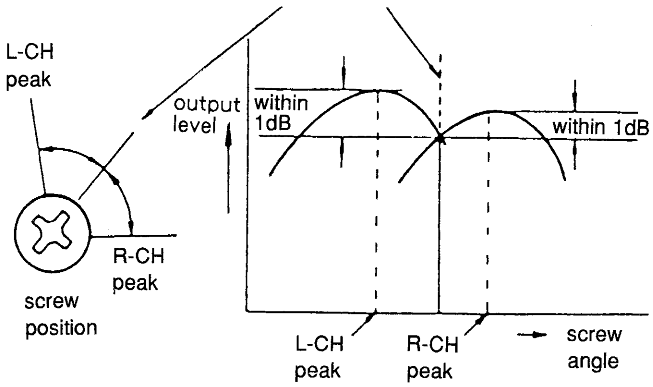
DECK A **DECK B**

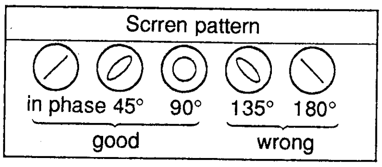
Procedure :

1. Forward Playback Mode



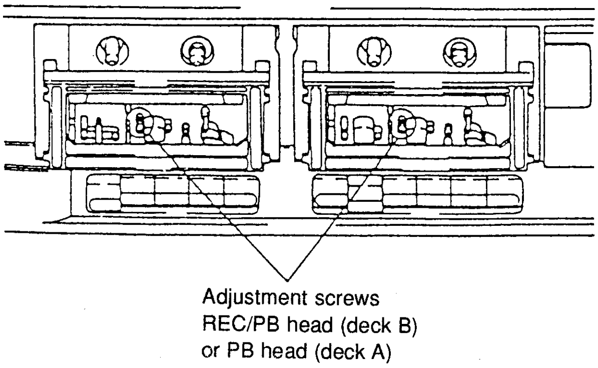
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.


L-CH
peak
output
level
within
1dB
within 1dB
R-CH
peak
screw
position
L-CH
peak
R-CH
peak
screw
angle


Scrren pattern
in phase 45°
90°
135°
180°
good
wrong

3. After the adjustments, apply suitable locking compound to the parts adjusted.

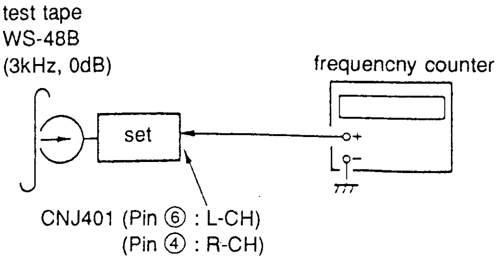
Adjustment Location :


Adjustment screws
REC/PB head (deck B)
or PB head (deck A)

Tape Speed Adjustment DECK A DECK B

Procedure :

- Perform high speed adjustment before normal speed adjustmant.
  Mode : playback


test tape
WS-48B
(3kHz, 0dB)
frequencny counter
set
CNJ401 (Pin ⑥ : L-CH)
(Pin ④ : R-CH)

(High Speed Adjustment)

1. Short-circuit TP601 (Main board) with the power off.
2. Turn on the power, press the DUB switch, and set high speed playback.
3. Set deck A into the FWD mode.
4. Adjust deck A: RV72A (H) so that the reading of the frequency counter becomes the specified value.
5. Stop deck A.
6. Carry out steps 2 to 5 for deck B in the same way.
7. After adjusting, short-circuit TP601.

(Normal Speed Adjustment)

1. Set the FWD playback mode.
2. Adjust deck A: RV71A (L), deck B: RV71B (L) so that the reading of the frequency counter becomes the adjustment value.

Adjustment Values:

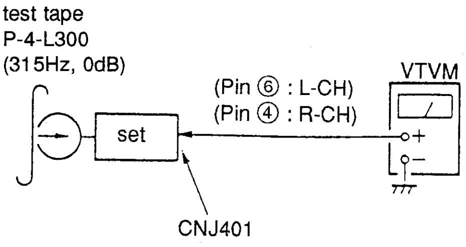
High Speed	6000 ± 30Hz
Normal Speed	3000 ± 15Hz

Adjust so that the difference between tape top and tape end is within 3%. Adjust so that the deviation between the speeds of deck A and deck B at the tape top is within 1.5%.

Adjustment Location : MD-A and MD-B boards.

Play back Level Adjustment DECK A DECK B

Procedure :
Mode : playback


test tape
P-4-L300
(315Hz, 0dB)
(Pin ⑥ : L-CH)
(Pin ④ : R-CH)
VTVM
set
CNJ401

Deck A is RV11A (L-CH) and RV21A (R-CH), deck B is RV11B (L-CH) and RV21B (R-CH) so that adjustment within adjustment level as follows.

Adjustment Level :
CNJ401 PB level : -7.7dB ± 0.5dB (0.30 to 0.34V)
Level Difference between Channels : within 0.5dB

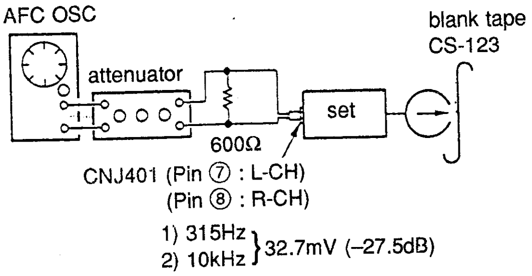
Confirm the level does not change in playback mode while changing the mode from playback to stop serveral times.

Adjustment Location : MD-A and MD-B borads

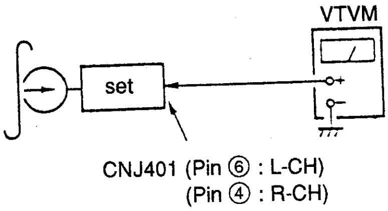
Record Blas Adjustment DECK B

Priocedure :

1. Mode : record


AFC OSC
attenuator
600Ω
set
blank tape
CS-123
CNJ401 (Pin ⑦ : L-CH)
(Pin ⑧ : R-CH)
1) 315Hz
2) 10kHz
}32.7mV (–27.5dB)

2. Mode : Playback


VTVM
set
+
–
CNJ401 (Pin ⑥ : L-CH)
(Pin ④ : R-CH)

Confirm playback the signal recorded in step 1 become adjustment level as follows.
If these levels do not adjustment level, adjustment the RV81 (L-CH) and RV91 (R-CH) to repeat step 1 and 2.

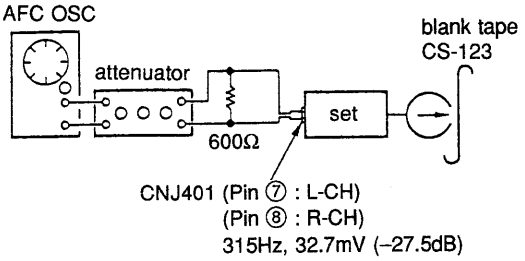
Adjustment Level : Playback output of 10kHz to playback output of 315Hz : ± 0.5dB.

Adjustment Location : MD-B borad

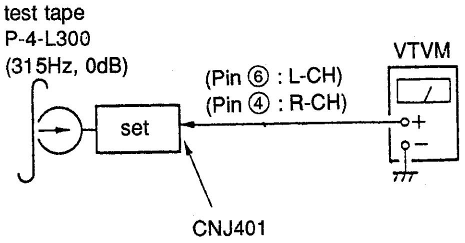
Record Level Adjustment DECK B

Procedure :

1. Mode : record


AFC OSC
attenuator
600Ω
set
blank tape
CS-123
CNJ401 (Pin ⑦ : L-CH)
(Pin ⑧ : R-CH)
315Hz, 32.7mV (–27.5dB)

2. Mode : Playback


test tape
P-4-L300
(315Hz, 0dB)
(Pin ⑥ : L-CH)
(Pin ④ : R-CH)
VTVM
set
+
–
CNJ401

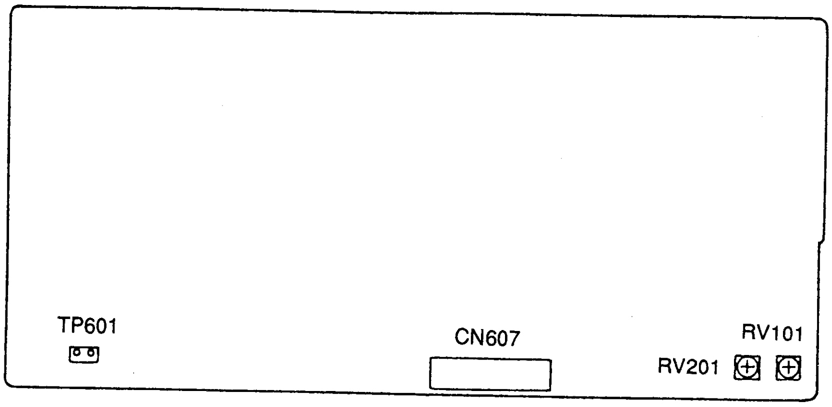
Confirm playback the signal recored in step 1 become adjustment level as follows.
If these levels do not adjustment level, adjustment the RV101 (L-CH) and RV201 (R-CH) to repeat step 1 and 2.

Adjustment Level :
CNJ401 PB level : –27.5dB ± 0.5dB (31 to 35mV).

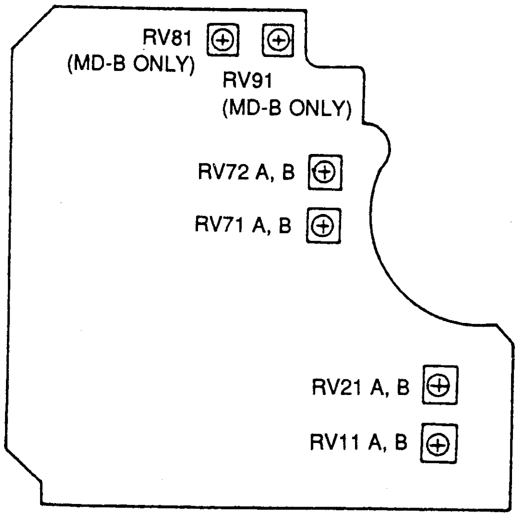
Adjustment Location : MAIN borad

Adjustment Location :

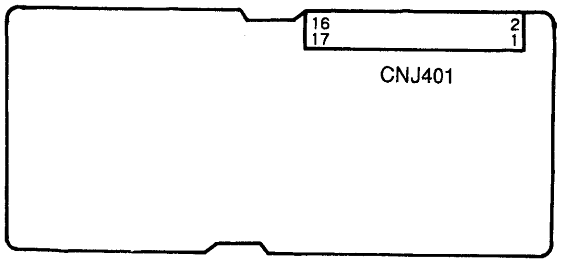
[MAIN BOARD] — Component Side —


TP601
CN607
RV101
RV201

[MD-A, MD-B BOARD] — Component Side —


RV81
(MD-B ONLY)
RV91
(MD-B ONLY)
RV72 A, B
RV71 A, B
RV21 A, B
RV11 A, B

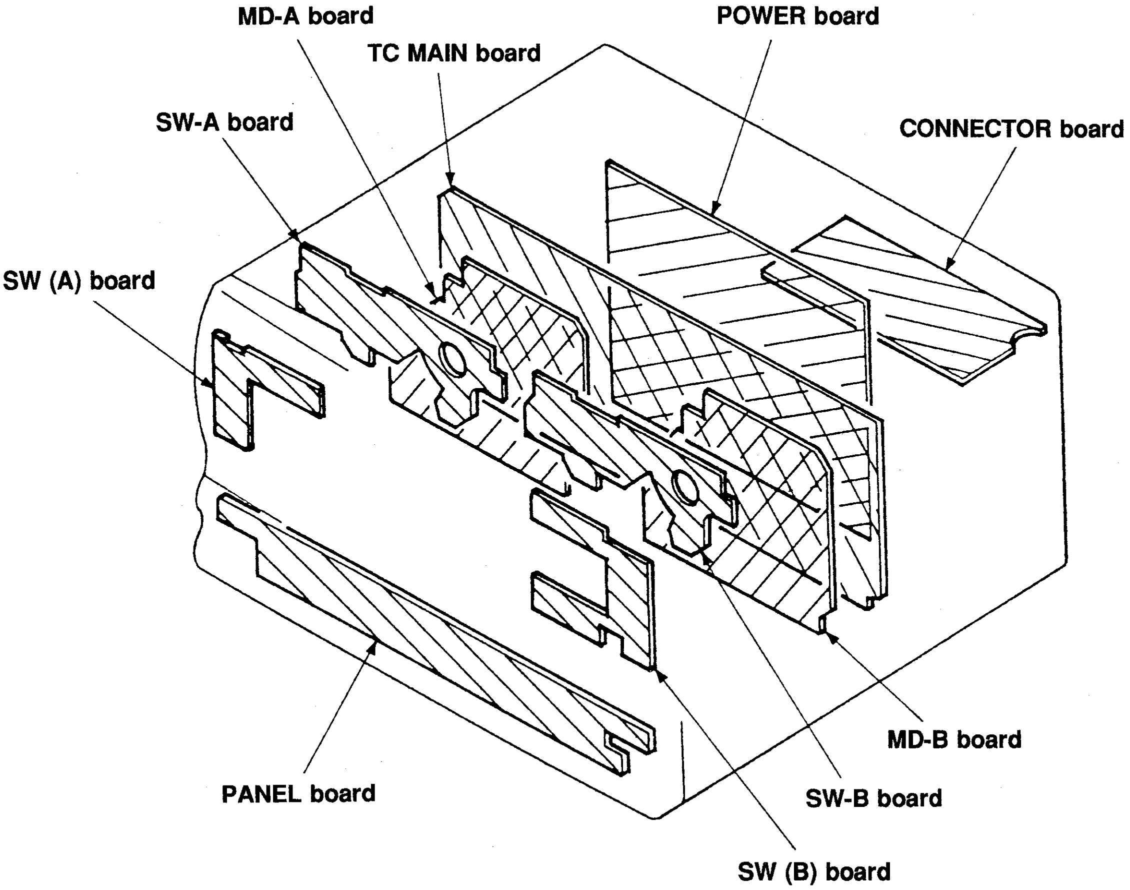
[CONNECTOR BOARD] — Component Side —


16
17
2
1
CNJ401

SECTION 5

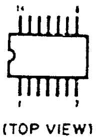
DIAGRAMS

5-1. CIRCUIT BOARDS LOCATION

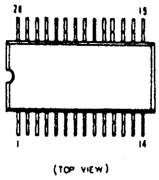

MD-A board
POWER board
TC MAIN board
SW-A board
CONNECTOR board
SW (A) board
MD-B board
PANEL board
SW-B board
SW (B) board

5-2. SEMICONDUCTOR LEAD LAYOUTS

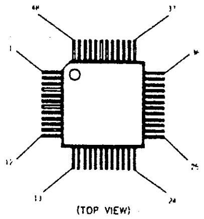
BA3308F
CD4066BCM


14
8
1
7
(TOP VIEW)

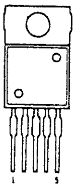
CXA1331M


28
15
1
14
(TOP VIEW)

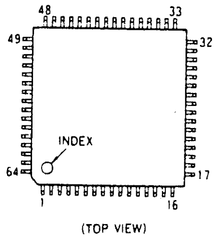
CXA1599Q



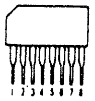
MC14052BF



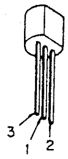
M38122-M2-060FP


48
33
49
32
INDEX
64
17
1
16
(TOP VIEW)

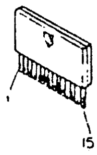
M5230L-A



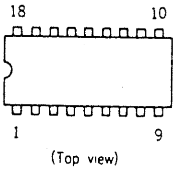
PST600E-T



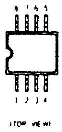
TA8242AK



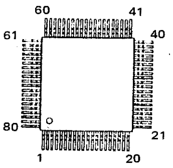
µPC1297CA


18
10
1
9
(Top view)

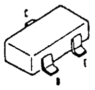
µPC4570G2


8 7 6 5
1 2 3 4
(TOP VIEW)

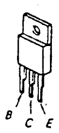
µPC78052-020


60
41
61
40
80
21
1
20

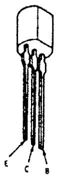
2SA1162-G
2SA1344
2SA1602-F
2SA4154-F L6
2SC3395
2SC3398
DTA144EK



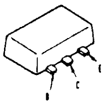
2SB1094-LK
2SD2012



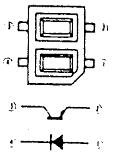
2SB1116-K



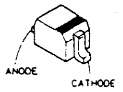
2SD1622-S
2SD999-CLCK



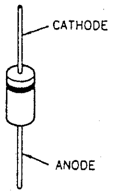
NJL5165K-B(H1)



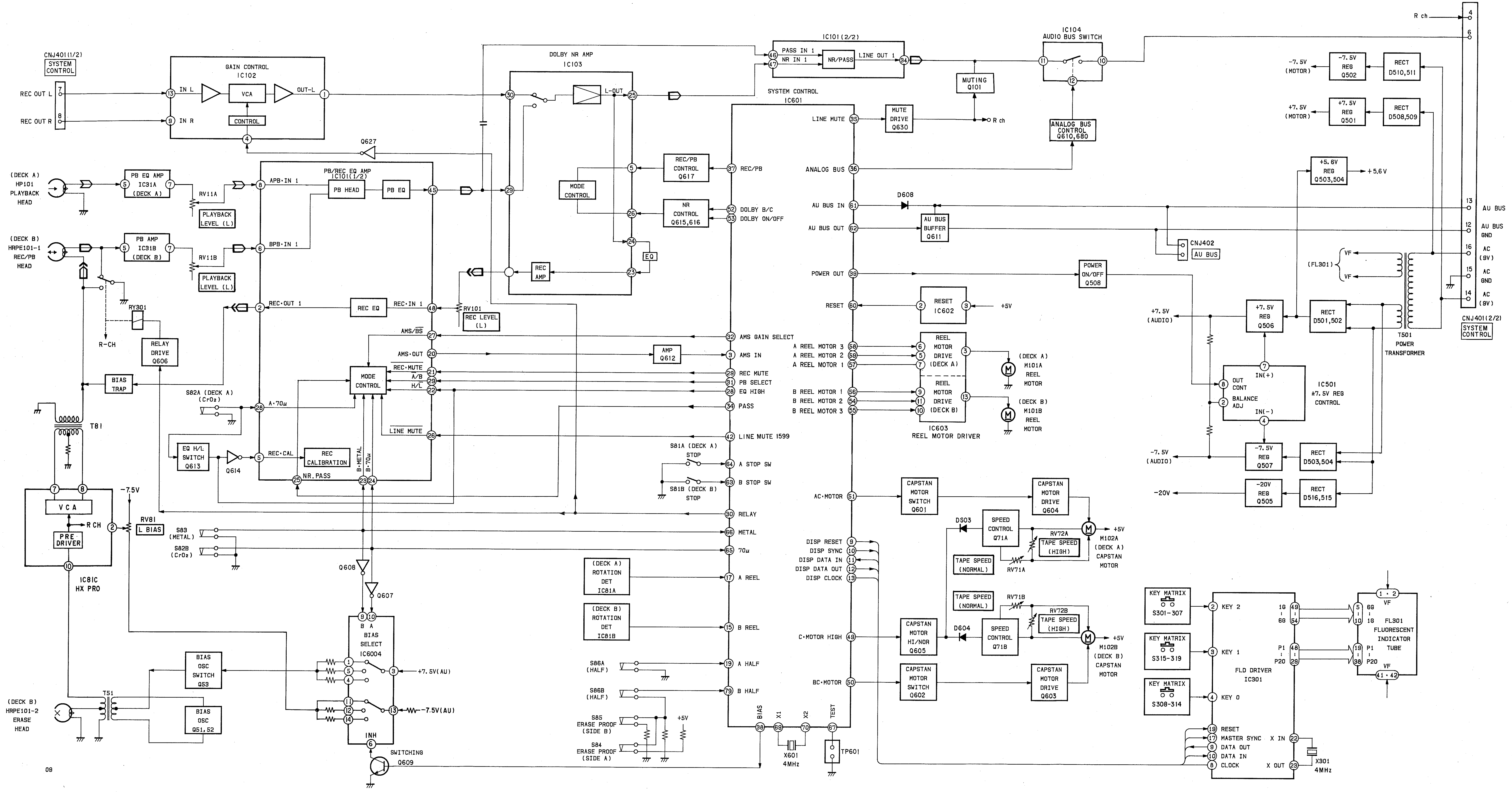
DTZ6.8B
MA110
MA8062
MA8082-M
MA8091
MA8180
02DZ2.0
1SS352


ANODE
CATHODE

10E2


CATHODE
ANODE

5-3. BLOCK DIAGRAM


CNJ401(1/2) SYSTEM CONTROL
REC OUT L
REC OUT R
GAIN CONTROL IC102
IN L
IN R
VCA
CONTROL
OUT-L
DOLBY NR AMP IC103
L-OUT
REC/PB CONTROL Q617
MODE CONTROL
NR CONTROL Q615,616
EQ
REC AMP
IC101(2/2)
PASS IN 1
NR IN 1
NR/PASS
LINE OUT 1
IC104 AUDIO BUS SWITCH
MUTING Q101
ANALOG BUS CONTROL Q610,680
MUTE DRIVE Q630
R ch
(DECK A) HP101 PLAYBACK HEAD
PB EQ AMP IC31A (DECK A)
RV11A
PLAYBACK LEVEL (L)
(DECK B) HRPE101-1 REC/PB HEAD
PB AMP IC31B (DECK B)
RV11B
PLAYBACK LEVEL (L)
PB/REC EQ AMP IC101(1/2)
APB·IN 1
BPB·IN 1
PB HEAD
PB EQ
REC·OUT 1
REC EQ
REC·IN 1
RV101
REC LEVEL (L)
Q627
RY301
RELAY DRIVE Q606
R-CH
BIAS TRAP
T81
S82A (DECK A) (CrO2)
A·70μ
AMS/BS
AMS·OUT
REC·MUTE
A/B
H/L
MODE CONTROL
LINE MUTE
EQ H/L SWITCH Q613
Q614
REC·CAL
REC CALIBRATION
NR.PASS
B·METAL
B·70μ
VCA
PRE DRIVER
R CH
-7.5V
RV81
L BIAS
IC81C HX PRO
S83 (METAL)
S82B (CrO2)
Q608
Q607
BIAS SELECT IC6004
B A
+7.5V(AU)
-7.5V(AU)
INH
SWITCHING Q609
BIAS OSC SWITCH Q53
BIAS OSC Q51,52
(DECK B) HRPE101-2 ERASE HEAD
T51
SYSTEM CONTROL IC601
LINE MUTE
REC/PB
DOLBY B/C
DOLBY ON/OFF
AMS GAIN SELECT
AMS IN
AMP Q612
REC MUTE
PB SELECT
EQ HIGH
PASS
LINE MUTE 1599
S81A (DECK A) STOP
A STOP SW
S81B (DECK B) STOP
B STOP SW
RELAY
METAL
70μ
(DECK A) ROTATION DET IC81A
A REEL
(DECK B) ROTATION DET IC81B
B REEL
S86A (HALF)
A HALF
S86B (HALF)
B HALF
S85 ERASE PROOF (SIDE B)
S84 ERASE PROOF (SIDE A)
+5V
BIAS
X1
X2
TEST
X601 4MHz
TP601
ANALOG BUS
AU BUS IN
AU BUS OUT
D608
AU BUS BUFFER Q611
POWER OUT
POWER ON/OFF Q508
RESET
RESET IC602
A REEL MOTOR 3
A REEL MOTOR 2
A REEL MOTOR 1
B REEL MOTOR 1
B REEL MOTOR 2
B REEL MOTOR 3
REEL MOTOR DRIVE (DECK A)
REEL MOTOR DRIVE (DECK B)
IC603 REEL MOTOR DRIVER
(DECK A) M101A REEL MOTOR
(DECK B) M101B REEL MOTOR
AC·MOTOR
CAPSTAN MOTOR SWITCH Q601
CAPSTAN MOTOR DRIVE Q604
D503
SPEED CONTROL Q71A
RV72A
TAPE SPEED (HIGH)
TAPE SPEED (NORMAL)
RV71A
M102A (DECK A) CAPSTAN MOTOR
DISP RESET
DISP SYNC
DISP DATA IN
DISP DATA OUT
DISP CLOCK
C·MOTOR HIGH
CAPSTAN MOTOR HI/NOR Q605
D604
SPEED CONTROL Q71B
RV71B
RV72B
M102B (DECK B) CAPSTAN MOTOR
BC·MOTOR
CAPSTAN MOTOR SWITCH Q602
CAPSTAN MOTOR DRIVE Q603
-7.5V (MOTOR)
-7.5V REG Q502
RECT D510,511
+7.5V (MOTOR)
+7.5V REG Q501
RECT D508,509
+5.6V REG Q503,504
+5.6V
CNJ402 AU BUS
(FL301) VF
+7.5V (AUDIO)
+7.5V REG Q506
RECT D501,502
T501 POWER TRANSFORMER
IC501 ±7.5V REG CONTROL
OUT CONT
BALANCE ADJ
IN(+)
IN(-)
-7.5V (AUDIO)
-7.5V REG Q507
RECT D503,504
-20V
-20V REG Q505
RECT D516,515
CNJ401(2/2) SYSTEM CONTROL
AU BUS
AU BUS GND
AC (9V)
AC GND
AC (9V)
KEY MATRIX S301-307
KEY MATRIX S315-319
KEY MATRIX S308-314
KEY 2
KEY 1
KEY 0
FLD DRIVER IC301
RESET
MASTER SYNC
DATA OUT
DATA IN
CLOCK
X IN
X OUT
X301 4MHz
1G
6G
P1
P20
FL301 FLUORESCENT INDICATOR TUBE
VF
09

5-4. PRINTED WIRING BOARDS — MAIN SECTION —

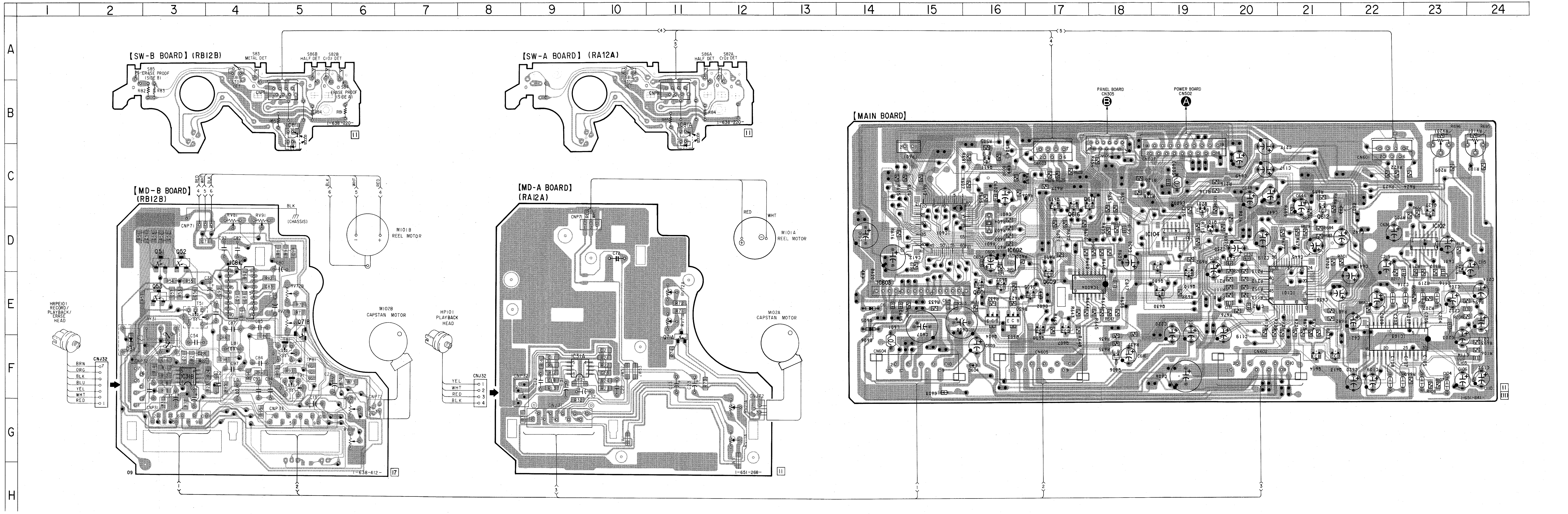
- See page 10 for Circuit Boards Location.
- See page 11 for Semiconductor Lead Layouts.

- **Semiconductor Location**

Ref. No.	Location
D31	F-2
D602	E-17
D603	F-15
D604	F-16
D605	E-14
D606	F-14
D607	D-22
D608	C-16
D620	E-14
IC31A	F-9
IC31B	F-3
IC81A	B-11
IC81B	B-5
IC81C	D-4
IC101	E-21
IC102	D-23
IC103	F-23
IC104	D-19
IC601	D-15
IC602	D-16
IC603	E-14
IC6004	E-18
Q51	D-3
Q52	D-3
Q53	E-3
Q71A	F-11
Q71B	E-5
Q101	D-20
Q201	C-19
Q601	E-16
Q602	E-16
Q603	F-16
Q604	F-16
Q605	E-17
Q606	F-18
Q607	F-17
Q608	F-17
Q609	E-17
Q610	E-19
Q611	C-16
Q612	D-21
Q613	F-22
Q614	F-21
Q615	C-17
Q616	D-17
Q617	C-18
Q627	D-23
Q630	E-19
Q680	E-19

Note:

- o—— : parts extracted from the component side.
- ● : Through hole.
- [ ]← indicates side identified with part number.
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.



1
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11
12
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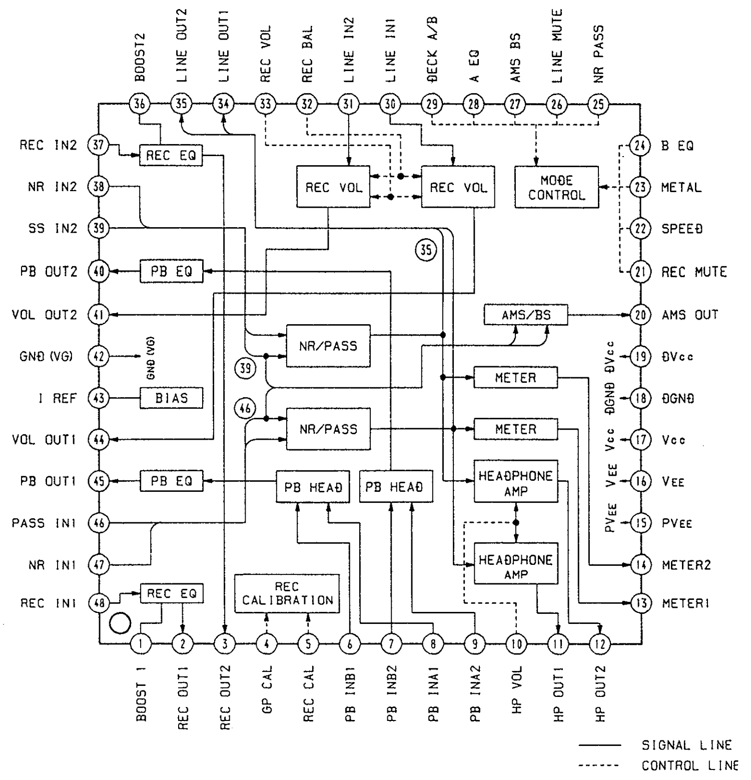
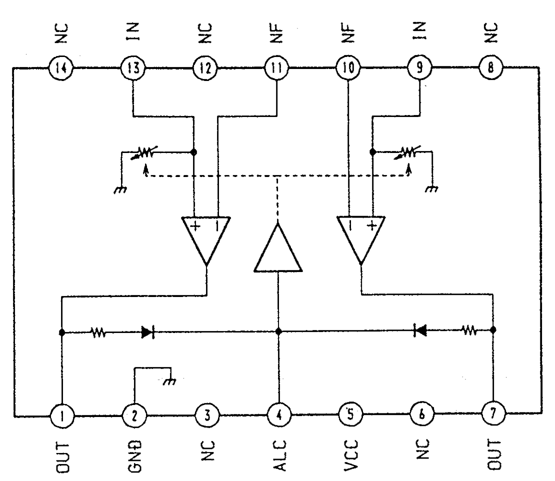
14
15
16
17
18
19
20
21
22
23
24
A
B
C
D
E
F
G
H
[SW-B BOARD] (RB12B)
S83 METAL DET
S86B HALF DET
S82B CrO2 DET
S85 ERASE PROOF (SIDE B)
S84 ERASE PROOF (SIDE A)
1-638-220-
[SW-A BOARD] (RA12A)
S86A HALF DET
S82A CrO2 DET
[MD-B BOARD] (RB12B)
CNP71
RV91
BLK
(CHASSIS)
M101B REEL MOTOR
M102B CAPSTAN MOTOR
HRPE101 RECORD/PLAYBACK/ERASE HEAD
CNJ32
BRN
ORG
BLK
BLU
YEL
WHT
RED
1-638-412-
[MD-A BOARD] (RA12A)
RED
WHT
M101A REEL MOTOR
M102A CAPSTAN MOTOR
HP101 PLAYBACK HEAD
YEL
WHT
RED
BLK
1-651-268-
[MAIN BOARD]
PANEL BOARD CN305
POWER BOARD CN502
IC104
IC101
IC102
IC103
IC601
IC602

• IC BLOCK DIAGRAMS

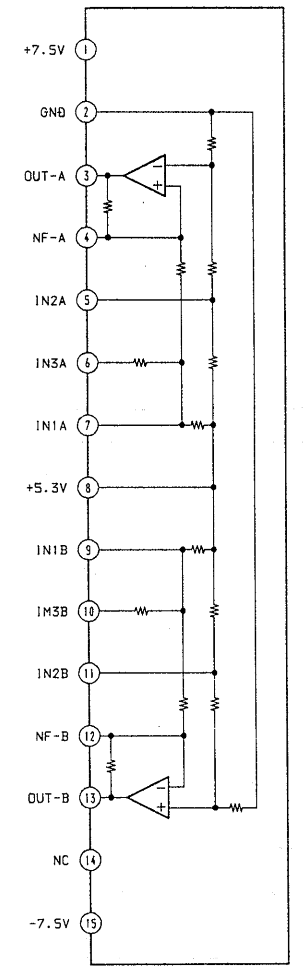
IC101 CXA1599Q


BOOST2
LINE OUT2
LINE OUT1
REC VOL
REC BAL
LINE IN1
LINE IN2
DECK A/B
AMS BS
A EQ
LINE MUTE
HP PASS
REC IN2
NR IN2
SS IN2
PB OUT2
VOL OUT2
GND (VG)
I REF
VOL OUT1
PB OUT1
PASS IN1
NR IN1
REC IN1
B EQ
METAL
SPEED
REC MUTE
AMS OUT
GVcc
GGND
Vcc
Vcc
PVcc
METER2
METER1
REC EQ
REC VOL
MODE CONTROL
PB EQ
NR/PASS
AMS/BS
METER
BIAS
HEAPHONE AMP
PB HEAD
REC CALIBRATION
BOOST1
REC OUT1
REC CAL
OP CAL
PB IN1
PB IN2
HP VOL
HP OUT1
HP OUT2
SIGNAL LINE
CONTROL LINE

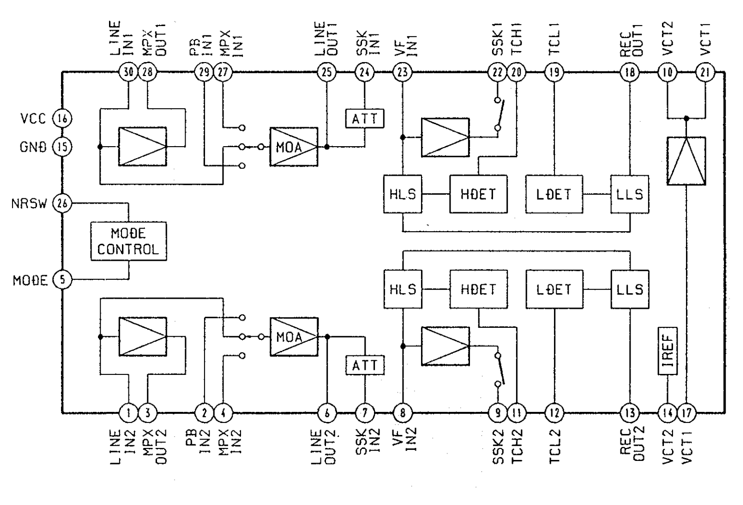
IC102 BA3308F


NC
IN
NC
NF
NF
IN
NC
OUT
GND
NC
ALC
VCC
NC
OUT

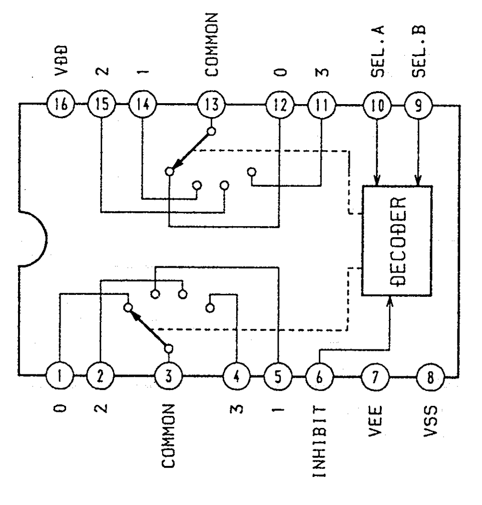
IC603 TA8242K


+7.5V
GND
OUT-A
NF-A
IN2A
IN3A
IN1A
+5.3V
IN1B
IN3B
IN2B
NF-B
OUT-B
NC
-7.5V

IC103 CXA1331M

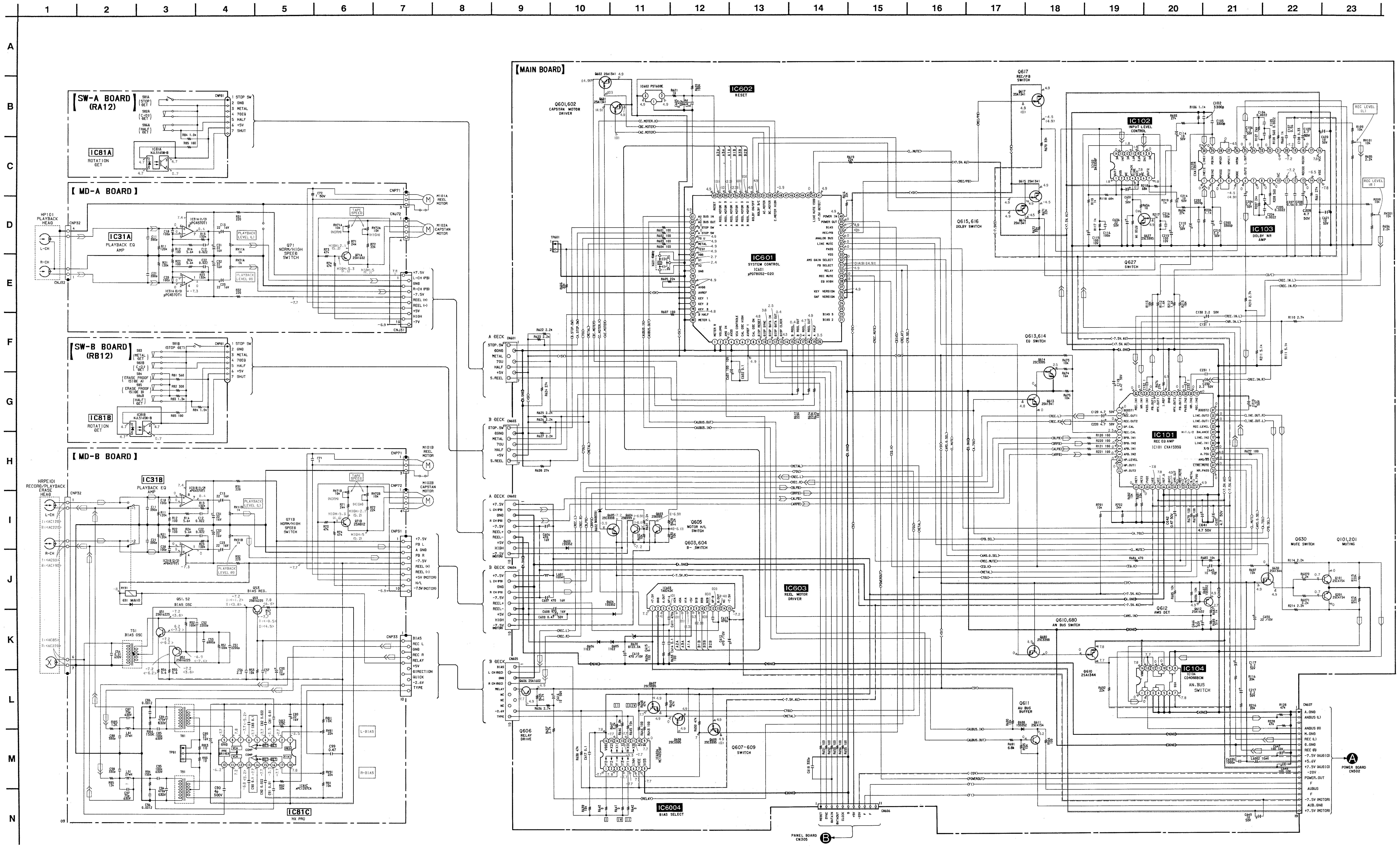

VCC
GND
NRSW
MODE
MODE CONTROL
MDA
ATT
HLS
HDET
LDET
LLS
VREF
LINE IN1
LINE OUT1
SSK IN1
REC OUT1
VCT1
LINE IN2
LINE OUT2
SSK IN2
REC OUT2
VCT2

IC6004 MC14052BF


VDD
2
1
COMMON
0
3
SEL.A
SEL.B
DECODER
0
2
COMMON
3
1
INHIBIT
VEE
VSS

5-5. SCHEMATIC DIAGRAM — MAIN SECTION —

• See pages 30, 31 for IC Pin Functions (IC601).


1
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16
17
18
19
20
21
22
23
A
B
C
D
E
F
G
H
I
J
K
L
M
N
SW-A BOARD (RA12)
IC81A ROTATION DET
MD-A BOARD
IC31A PLAYBACK EQ AMP
SW-B BOARD (RB12)
IC81B ROTATION DET
MD-B BOARD
IC31B PLAYBACK EQ AMP
IC81C NX PRO
MAIN BOARD
IC602 RESET
IC601 SYSTEM CONTROL
IC603 REEL MOTOR DRIVER
IC6004 BIAS SELECT
IC101 REC EQ AMP
IC102 INPUT LEVEL CONTROL
IC103 DOLBY NR AMP
IC104 AN.BUS SWITCH
Q601,602 CAPSTAN MOTOR DRIVER
Q617 REC/PB SWITCH
Q615,616 DOLBY SWITCH
Q627 SWITCH
Q613,614 EQ SWITCH
Q605 MOTOR H/L SWITCH
Q603,604 B- SWITCH
Q612 AMS DET
Q610,680 AN BUS SWITCH
Q630 MUTE SWITCH
Q101,201 MUTING
Q606 RELAY DRIVE
Q607-609 SWITCH
Q611 AU BUS BUFFER
Q51,52 BIAS OSC
Q53 BIAS REC
Q71 NORM/HIGH SPEED SWITCH
Q71B NORM/HIGH SPEED SWITCH
M101A REEL MOTOR
M102A CAPSTAN MOTOR
M101B REEL MOTOR
M102B CAPSTAN MOTOR
HP101 PLAYBACK HEAD
HRPE101 RECORD/PLAYBACK ERASE HEAD
POWER BOARD CN502
PANEL BOARD CN305

Note:

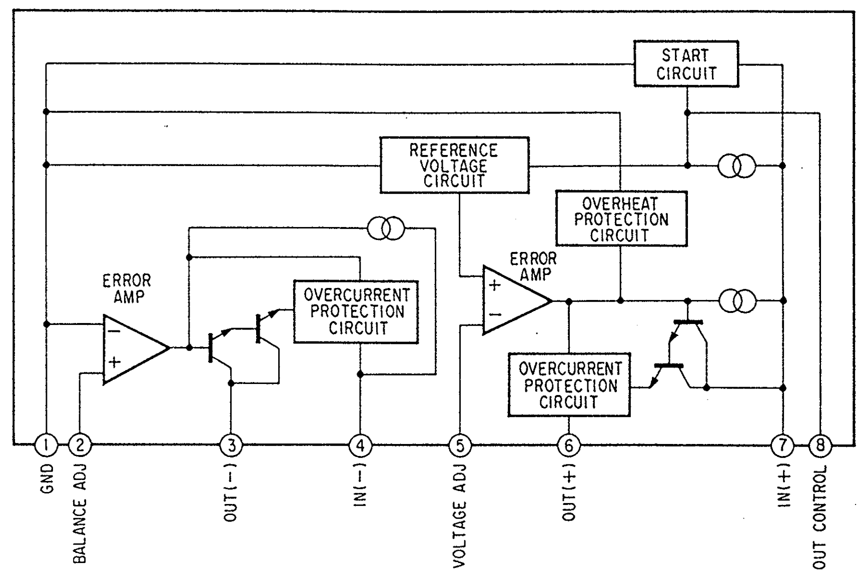
- All capacitors are in µF unless otherwise noted. pF:µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▬▬ : B+ Line
- ▬ ▬ ▬ : B– Line
- ☐ : adjustment for repair.
- Voltage and waveforms are dc with respect to ground.
  no mark : STOP
  ( ) : PB (DECK B)
  (( )) : PB (DECK A)
  < > : REC
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⪢ : PB (DECK A)
  ▷ : PB (DECK B)
  ▷⪢ : REC (DECK B)

5-6. SCHEMATIC DIAGRAM — PANEL/POWER SECTION —

- See page 29 for IC Pin Functions (IC301).

- IC BLOCK DIAGRAM

IC501 M5230L


START CIRCUIT
REFERENCE VOLTAGE CIRCUIT
OVERHEAT PROTECTION CIRCUIT
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
ERROR AMP
OVERCURRENT PROTECTION CIRCUIT
① GND
② BALANCE ADJ
③ OUT(−)
④ IN(−)
⑤ VOLTAGE ADJ
⑥ OUT(+)
⑦ IN(+)
⑧ OUT CONTROL

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
A B C D E F G H I J
POWER BOARD
A MAIN BOARD CN607
CN502 19P
A GND
ANBUS (L)
POWER OFF
ANBUS (R)
M GND
REC (L)
D GND
REC (R)
-7.5V (AUDIO)
+5.6V
+7.5V (AUDIO)
-20V
POWER OUT
F
AUBUS
F
-7.5V (MOTOR)
AUB GND
+7.5V (MOTOR)
Q501 +7.5V REG
IC501 M5230L +7.5V CONTROL
Q508 POWER ON/OFF SWITCH
Q502 -7.5V REG
T501 POWER TRANSFORMER
AC10V
Q506 2SB1375 +7.5V REG
Q507 2SD2012 -7.5V REG
Q503,504 +5.6V REG
Q505 -20V REG
CNP501
CN403
CONNECTOR BOARD
CNJ401
A.GND
AN.BUS (R)
A.GND
AN.BUS (L)
REC.OUT (L)
REC.OUT (R)
AU.BUS.GND
AU.BUS
AC (5V)
AC.GND
AC (5V)
A.GND
CNJ401 SYSTEM CONTROL
AU BUS
B MAIN BOARD CN606
CN305
PANEL BOARD
FL301 FLUORESCENT INDICATOR TUBE
IC301 FL DRIVER M38122-M2-060FP
X301 4MHz
SW(B) BOARD
SW(A) BOARD
CN302
CN303
CN304
S303 MUTE
S307 RESET
S306 COUNTER A/B
S305 CD SYNCHRO
S304 DUBBING MODE
S302 DIRECTION MODE
S301 DOLBY NR
S308
S309
S310
S311 PAUSE
S312
S313
S314 REC
S315
S316
S317
S318
S319
AMS

Note:

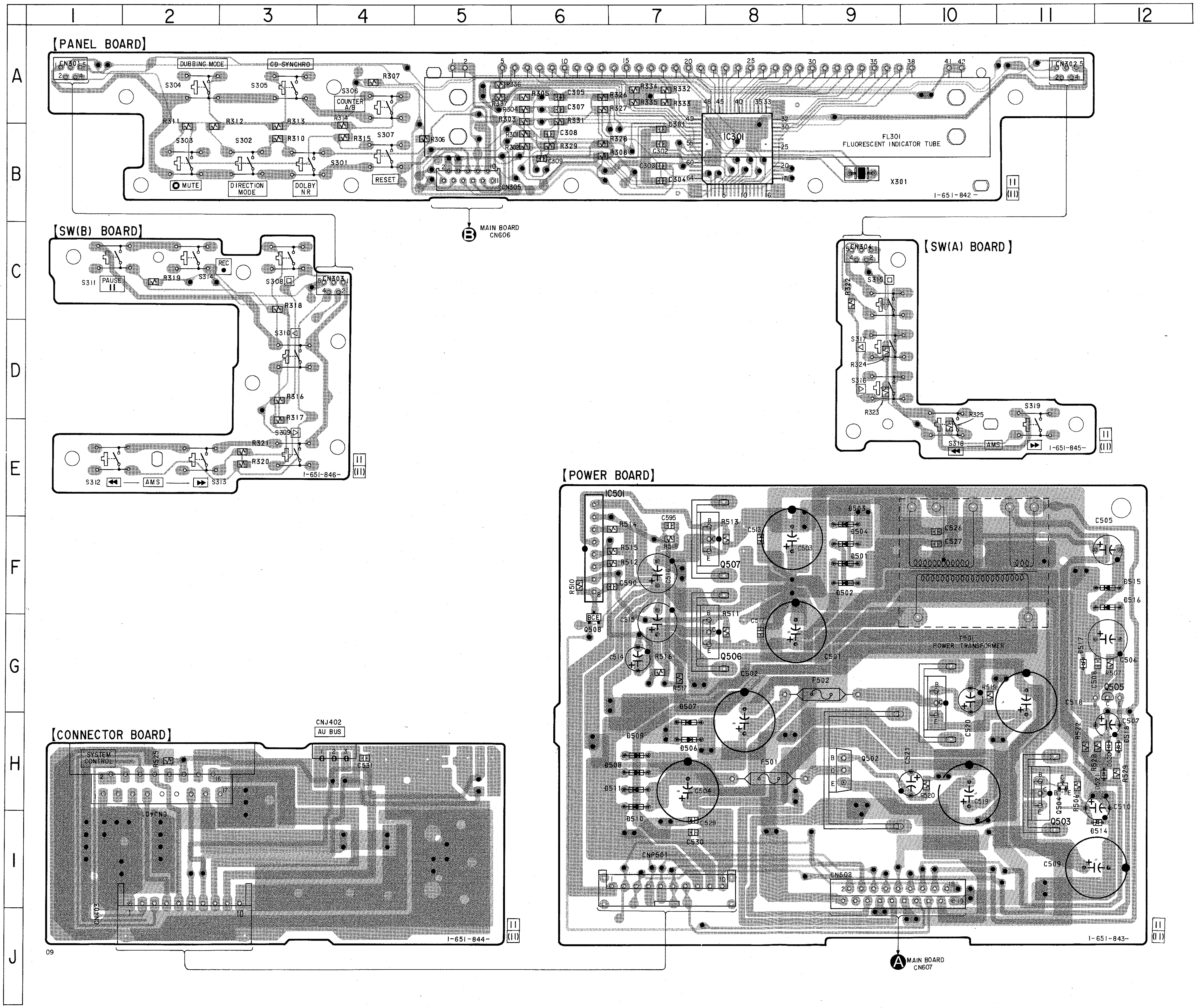
- All capacitors are in µF unless otherwise noted. pF:µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬▬▬ : B+ Line
- ▬ ▬ ▬ : B− Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  - ▷ : PB
  - ▷▷ : REC

5-7. PRINTED WIRING BOARDS — PANEL/POWER SECTION —

- See page 10 for Circuit Boards Location.
- See page 11 for Semiconductor Lead Layouts.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A
B
C
D
E
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G
H
I
J
[PANEL BOARD]
DUBBING MODE
CD SYNCHRO
COUNTER A/B
MUTE
DIRECTION MODE
DOLBY NR
RESET
CN301
CN302
CN305
IC301
FL301 FLUORESCENT INDICATOR TUBE
X301
1-651-842
MAIN BOARD CN606
[SW(B) BOARD]
PAUSE
REC
CN303
S312
AMS
S313
1-651-846
[SW(A) BOARD]
CN304
AMS
1-651-845
[POWER BOARD]
IC501
Q507
Q506
Q508
Q502
Q503
Q505
T501 POWER TRANSFORMER
F501
F502
CNP501
CN502
1-651-843
MAIN BOARD CN607
[CONNECTOR BOARD]
CNJ402
AU BUS
SYSTEM CONTROL
CN403
1-651-844

- **Semiconductor Location**

Ref. No.	Location
D501	F-9
D502	F-9
D503	E-9
D504	F-9
D506	H-7
D507	G-7
D508	H-7
D509	H-7
D510	I-7
D511	H-7
D514	I-12
D515	F-12
D516	F-12
D517	G-11
D518	H-12
D520	H-12
D521	H-12
IC301	B-8
IC501	E-7
Q501	G-10
Q502	H-9
Q503	I-11
Q504	H-11
Q505	G-11
Q506	G-8
Q507	F-8
Q508	G-6

Note:
- ● : Through hole.
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.

5-8. IC PIN FUNCTIONS

- **IC301 FL DRIVER (M38122-M2-060FP)**

Pin No.	Pin Name	I/O	Function
1	KYE3	I	Not used (Open).
2	KEY2	I	Key input (AD input)
3	KEY1	I	
4	KEY0	I	
5	ALL ON	I	Not used (Fixed at "H").
6	TEST MODE	I	
7	VERSION	I	VERSION discrimination input
8	CLOCK	I	Clock input from IC601
9	DATA OUT	O	Data output to IC601
10	DATA IN	I	Data input from IC601
11 to 16	——	O	Not used (Open).
17	MASTER SYNC	I	SYNC input from IC601.
18	SIRCS	I	Not used (Open).
19	RESET	I	Reset input from IC601
20, 21	——	O	Not used (Open).
22	X IN	–	Clock (4 MHz)
23	X OUT	–	Clock (4 MHz)
24	Vss	–	GND
25 to 28	——	O	Not used (Open).
29 to 48	P20 to P1	O	FL display drive
49 to 54	1G to 6G	O	FL display drive
55, 56	——	–	Not used (Open).
57	Vcc	–	+5V
58	VEE	–	–20V
59	AVss	–	GND
60	VREF	I	+5V
61 to 64	——		Not used (Open).

- **IC601 SYSTEM CONTROL (μPC78052-020)**

Pin No.	Pin Name	I/O	Function
1	METER R	I	VCA control input. Not used (Connected to GND)
2	VOLUME 0	I	
3	AMS IN	I	AMS signal input
4	AVss	–	GND
5	VCA CONTROL	O	VCA control output. Not used (Open)
6	CAL OSC HIGH	O	Electric adjustment mode output. Not used (Open)
7	AVREF1	–	+5V
8	CAL OSC ON	O	Not used (Open)
9	DISP RESET	O	RESET output to IC301
10	DISP SYNC	O	SYNC output to IC301
11	DISP DATA IN	I	DATA input from IC301
12	DISP DATA OUT	O	DATA output to IC301
13	DISP CLOCK	O	CLOCK output to IC301
14	——	–	Not used (Open)
15	B REEL	I	Deck B reel table detection
16	B REEL OUT	O	Deck B reel table output
17	A REEL	I	Deck A reel table detection
18	A REEL OUT	O	Deck A reel table output
19	A HALF	I	Deck A half switch detection
20 to 24	——	–	Not used (Open)
25	SAF VERSION	I	Not used (Connected to GND)
26	KEY VERSION	I	Not used (Connected to +5V)
27	——	–	Not used
28	EQ HIGH	O	Normal speed: “L”, High speed: “H”
29	REC MUTE	O	“L”: REC MUTE
30	RELAY	O	Relay ON/OFF. ON: “L”, OFF: “H”
31	PB SELECT	O	Deck A/B select. Deck A: “L”, Deck B: “H”
32	AMS GAIN SELECT	O	BS: “L”, AMS: “H”
33	Vss	–	GND
34	PASS	O	“L”: PASS MODE
35	LINE MUTE	O	“L”: MUTE
36	ANALOG BUS	O	Analog bus output
37	REC/PB	O	REC: “L”, PB: “H”
38	BIAS	O	“L”: BIAS ON
39	POWER OUT	O	POWER ON: “L”, STANDBY: “H”
40	POWER IN	I	POWER ON detection
41	+7.5V DETECT	I	+7.5V detection
42	LINE MUTE 1599	O	MUTE output to IC101
43 to 48	——	I	Not used (Open)
49	C. MOTOR HIGH	O	“H”: Capstan motor high speed
50	BC. MOTOR	O	Capstan motor control for Deck B. “H”: ON

Pin No.	Pin Name	I/O	Function
51	AC. MOTOR	O	Capstan motor control for Deck A. "H": ON
52	DOLBY B/C	O	C: "L", B: "H"
53	DOLBY ON/OFF	O	ON: "L", OFF: "H"
54	B REEL MOTOR 2	O	Deck B Reel motor control output
55	B REEL MOTOR 3	O	
56	B REEL MOTOR 1	O	
57	A REEL MOTOR 1	O	Deck A Reel motor control output
58	A REEL MOTOR 3	O	
59	A REEL MOTOR 2	O	
60	RESET	–	Reset input. "L": Reset
61	AU BUS IN	I	Audio bus input
62	AU BUS OUT	O	Audio bus output
63	B STOP SW	I	Deck B STOP switch detection
64	A STOP SW	I	Deck A STOP switch detection
65	70U	I	70 μsec switch detection
66	METAL	I	METAL switch detection
67	TEST	I	"L": Electric adjustment mode
68	VDD	–	+5V
69	X1	O	Clock (4 MHz)
70	X2	I	
71	GND	–	GND
72	——	O	Not used (open)
73	VERSION	I	VERSION discrimination input
74	AVDD	–	+5V
75	AVREF	–	
76 to 78	KEY1 to KEY3	I	Not used (open)
79	B HALF	I	Deck B half switch detection
80	METER L	I	VCA control input. Not used (Connected to GND)

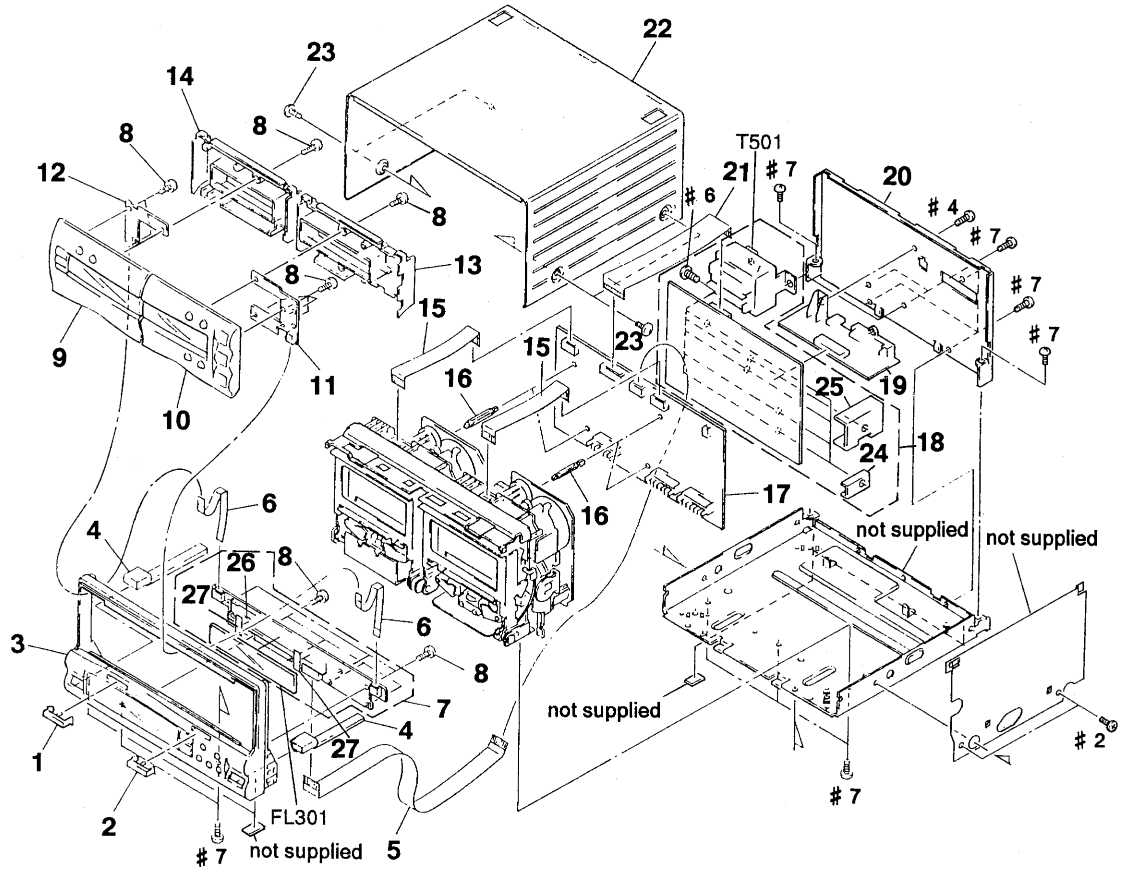
SECTION 6
EXPLODED VIEWS

NOTE:

- Items marked " ＊ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- G : German model
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

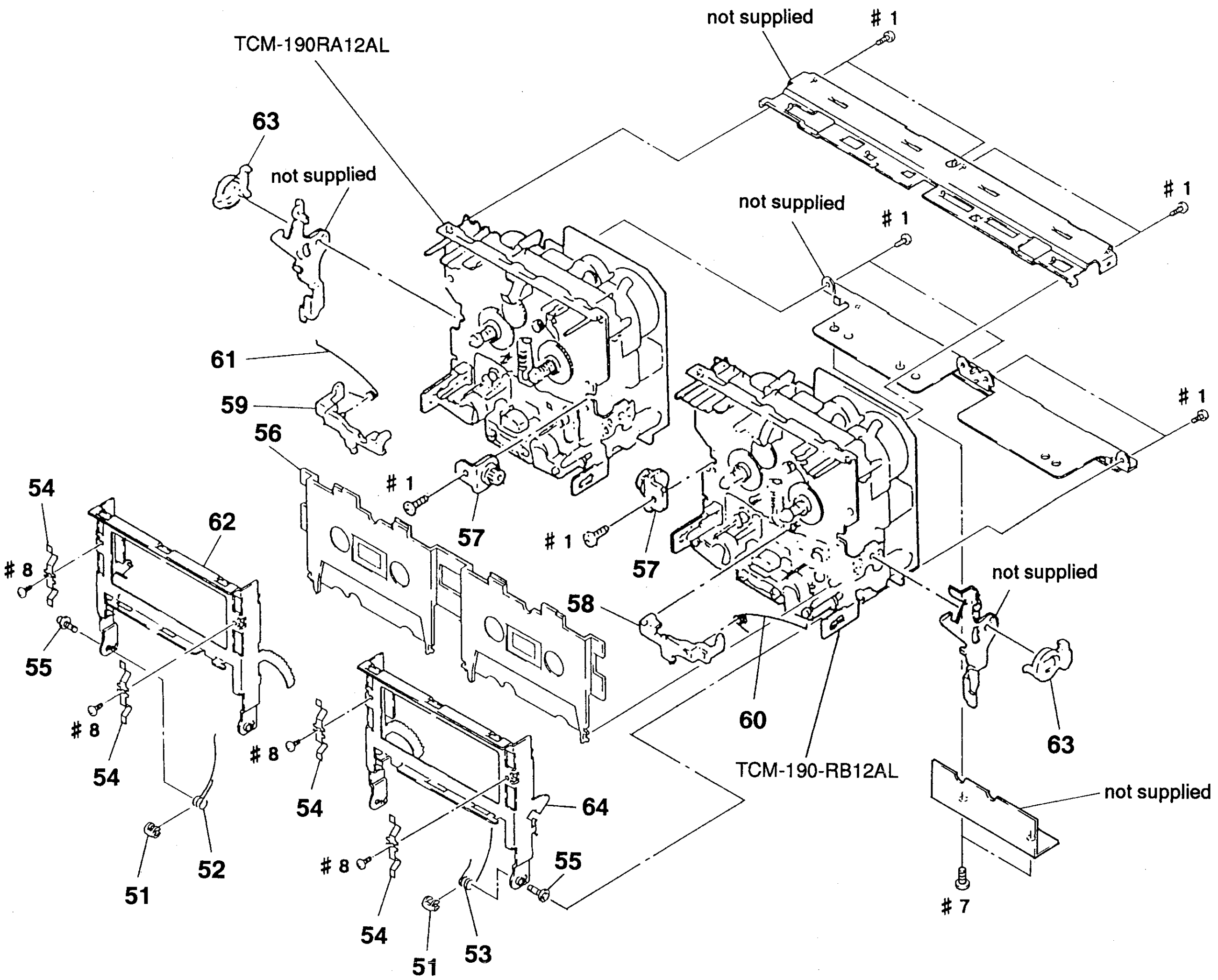
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. CASE AND CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
1	3-905-904-01	COVER (AZIMUTH A)	
2	3-905-905-01	COVER (AZIMUTH B)	
3	X-3367-319-1	PANEL ASSY, FRONT	
4	3-905-906-01	SLIDER	
5	1-765-405-11	WIRE (FLAT TYPE) (19 CORE)	
6	1-751-819-11	WIRE (FLAT TYPE) (5 CORE)	
＊ 7	A-2007-214-A	PANEL BOARD, COMPLETE	
8	4-951-620-01	SCREW (2.6X8), +BVTP	
9	X-3367-320-1	LID (A) ASSY, CASSETTE	
10	X-3367-866-1	LID (B) ASSY, CASSETTE	
＊ 11	1-651-846-11	SW (B) BOARD	
＊ 12	1-651-845-11	SW (A) BOARD	
＊ 13	3-907-991-01	COVER (B), CASSETTE LID	
＊ 14	3-907-990-01	COVER (A), CASSETTE LID	
15	1-765-404-11	WIRE (FLAT TYPE) (7 CORE)	
＊ 16	3-682-419-21	HOLDER, P.C.B	
＊ 17	A-2007-213-A	TC MAIN BOARD, COMPLETE	
＊ 18	A-2007-215-A	POWER BOARD, COMPLETE	
＊ 19	1-651-844-11	CONNECTOR BOARD	
＊ 20	3-905-901-61	PANEL, BACK (EXCEPT G)	
＊ 20	3-905-901-71	PANEL, BACK (G)	
21	1-751-821-11	WIRE (FLAT TYPE) (11 CORE)	
22	4-961-519-31	CASE	
23	3-363-099-21	SCREW (CASE 3 TP2)	
＊ 24	3-309-144-21	HEAT SINK	
＊ 25	4-880-403-11	HEAT SINK	
＊ 26	3-905-909-01	HOLDER (FL)	
＊ 27	4-932-810-11	CUSHION (FL)	
FL301	1-517-232-11	INDICATOR TUBE, FLUORESCENT	
⚠T501	1-423-812-11	TRANSFORMER, POWER	

6-2. CASSETTE HOLDER SECTION



not supplied
# 1
TCM-190RA12AL
63
not supplied
# 1
not supplied
# 1
61
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# 1
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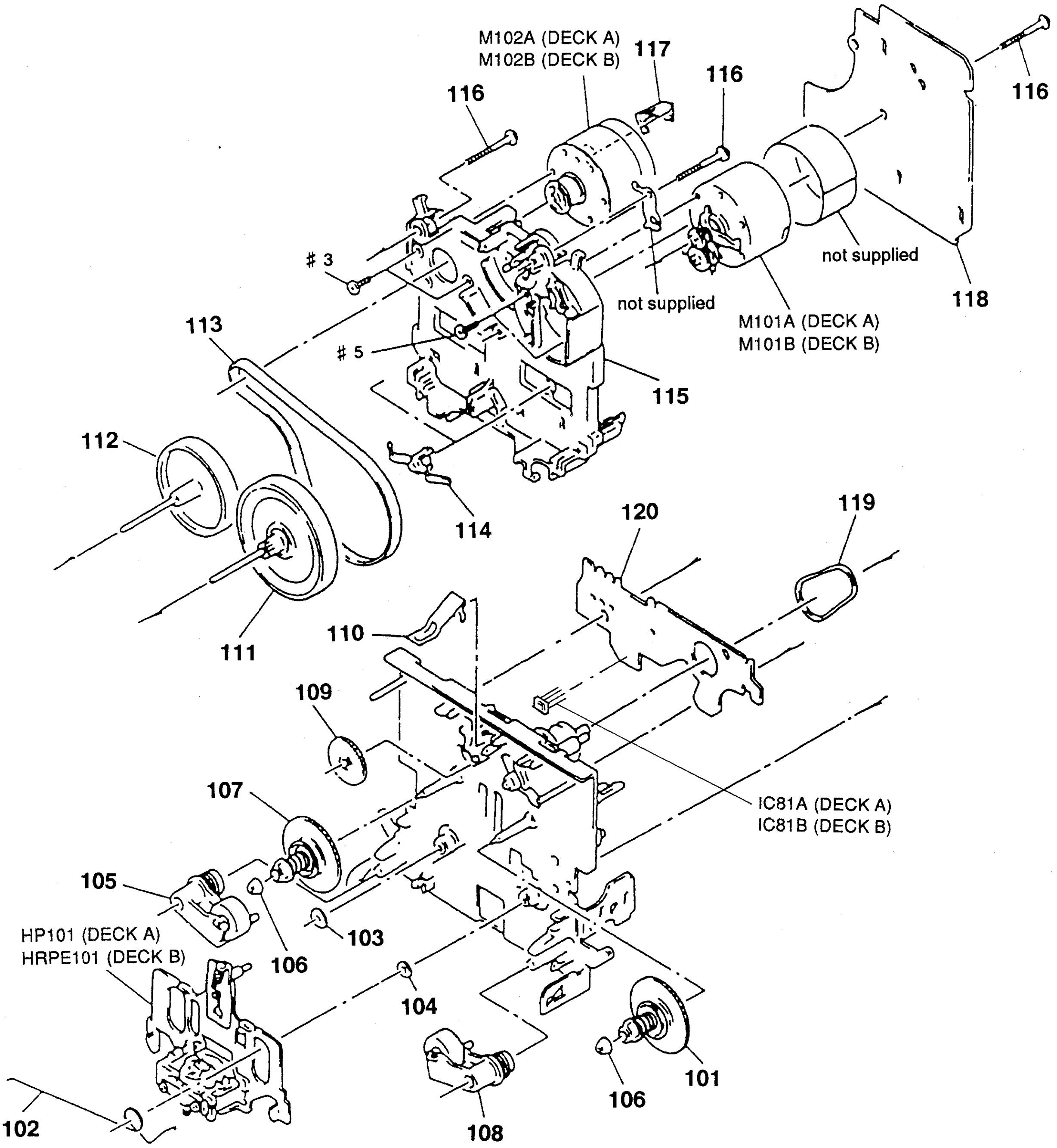
62
# 8
57
# 1
57
58
55
# 8
54
# 8
54
60
TCM-190-RB12AL
not supplied
63
not supplied
64
52
51
# 8
55
54
51
53
# 7

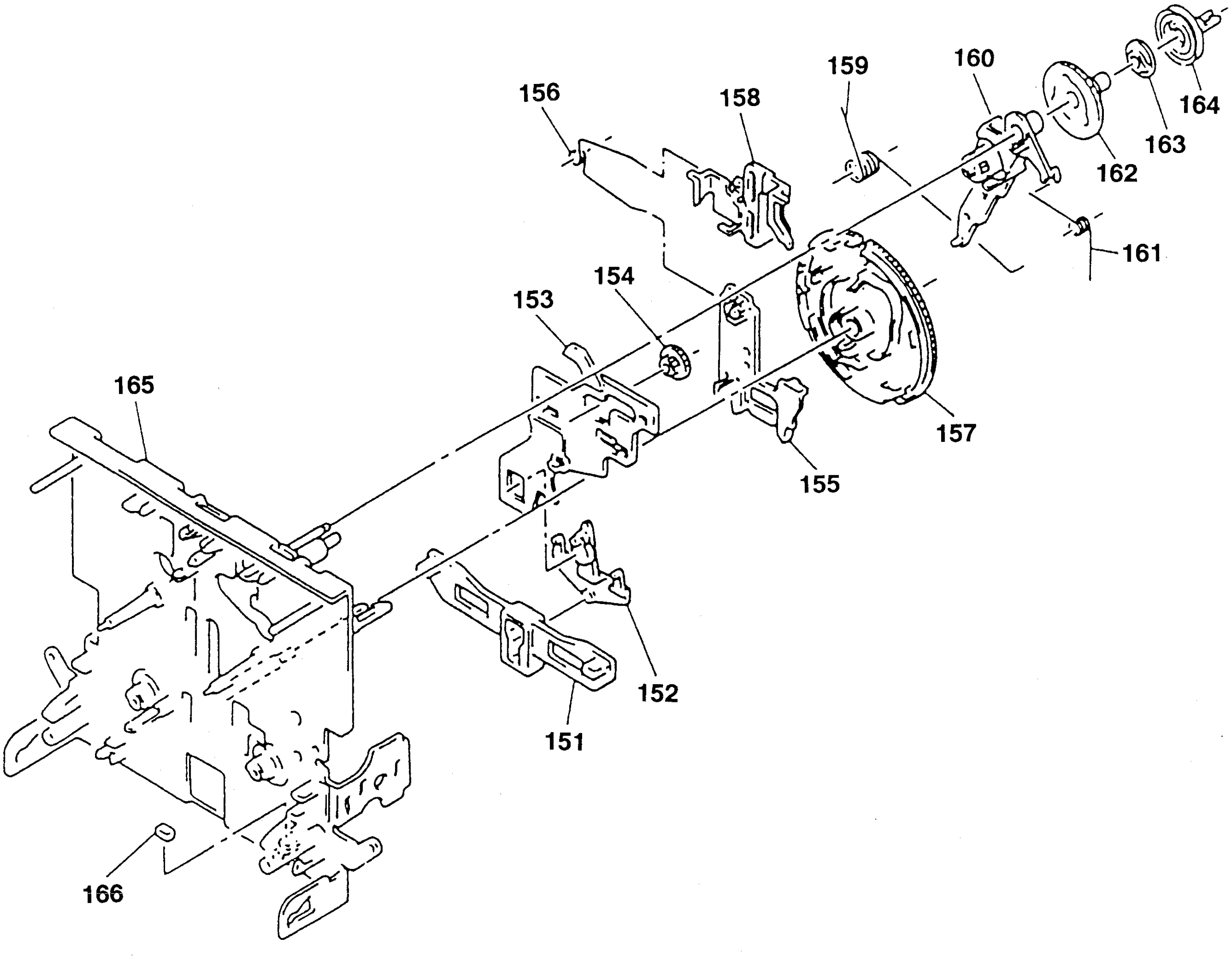
Ref. No.	Part No.	Description	Remark
51	3-367-720-01	RING (W), RETAINING	
52	3-354-959-01	SPRING (LOADING L), TORSION	
53	3-354-960-01	SPRING (LOADING R), TORSION	
54	3-340-137-01	SPRING, CASSETTE RETAINER	
55	3-367-721-01	SHAFT (FULCRUM SHAFT)	
56	3-367-711-01	RETAINER, CASSETTE	
57	3-354-963-01	DAMPER	
58	3-354-956-01	LEVER (EJ SAFTY LEVER R)	
59	3-354-955-01	LEVER (EJ SAFTY LEVER L)	
60	3-354-962-01	SPRING (EJ SAFTY SPRING R)	
61	3-354-961-01	SPRING (EJ SAFTY SPRING L)	
62	3-367-712-11	HOLDER (L), CASSETTE	
63	3-354-957-01	JOINT (LOCK LEVER)	
64	3-367-713-11	HOLDER (R), CASSETTE	

6-3. MECHANISM DECK SECTION-1
(DECK A: TCM-190RA12AL/DECK B: TCM-190RB12AL)


M102A (DECK A)
M102B (DECK B)
117
116
116
116
#3
#5
113
112
111
115
114
not supplied
not supplied
M101A (DECK A)
M101B (DECK B)
118
120
119
110
109
107
105
HP101 (DECK A)
HRPE101 (DECK B)
106
103
104
106
101
102
108
IC81A (DECK A)
IC81B (DECK B)

Ref. No.	Part No.	Description	Remark
101	X-3366-970-1	TABLE ASSY, REEL	
102	3-907-362-01	SPRING, TORSION	
103	3-356-714-01	WASHER	
104	3-356-713-01	WASHER	
105	X-3366-048-1	LEVER (PINCH R) ASSY	
106	3-913-841-01	CAP (REEL)	
107	X-3366-971-1	TABLE ASSY (B), REEL	
108	X-3366-047-1	LEVER (PINCH F) ASSY	
109	3-359-424-01	GEAR (REV GEAR)	
110	3-359-430-01	SPRING(CASSETTE RETAINER),LEAF	
111	X-3367-629-1	FLYWHEEL (FWD) ASSY	
112	X-3367-630-2	FLYWHEEL (REV) ASSY	
113	3-359-417-01	BELT (FLAT), CAPSTAN	
114	3-575-321-00	RETAINER, THRUST, CAPSTAN	
115	3-359-436-11	BASE (THRUST RETAINER),FITTING	
116	3-359-414-01	SCREW (+PTPWH 2X23)	
117	1-638-983-11	MOTOR FLEXIBLE BOARD	
* 118	A-2006-623-A	MD-A BOARD, COMPLETE (RA12AL)	
* 118	A-2007-040-A	MD-B BOARD, COMPLETE (RB12AL)	
119	3-359-466-01	BELT (FR), SQUARE	
* 120	1-638-020-11	SW-A BOARD (DECK A)	
* 120	1-638-020-11	SW-B BOARD (DECK B)	
HP101	A-2003-757-A	BASE ASSY, HEAD (DECK A)	
HRPE101	A-2003-930-A	BASE ASSY, HEAD (DECK B)	
IC81A	8-749-924-10	PHOTO REFECTOR NJ5165K-B (DECK A)	
IC81B	8-749-924-10	PHOTO REFECTOR NJ5165K-B (DECK B)	
M101A	X-3363-501-2	MOTOR ASSY (REEL)(DECK A)	
M101B	X-3363-501-2	MOTOR ASSY (REEL)(DECK B)	
M102A	X-3365-377-1	MOTOR ASSY (CAPSTAN)(DECK A)	
M102B	X-3365-377-1	MOTOR ASSY (CAPSTAN)(DECK B)	

6-4. MECHANISM DECK SECTION-2
(DECK A: TCM-190RA12AL/DECK B: TCM-190RB12AL)



Ref. No.	Part No.	Description	Remark
* 151	3-359-425-01	SLIDER (REVERSE SLIDER)	
152	3-359-426-01	LEVER (REVERSE LEVER)	
* 153	3-359-415-01	SLIDER (TRIGGER SLIDER)	
154	3-359-448-01	GEAR (TRIGGER)	
* 155	3-359-427-01	SLIDER (LEVERSE SLIDER)	
156	3-359-454-01	SPRING, TORSION	
157	3-359-420-01	GEAR (CAM GEAR)	
158	3-359-429-01	SLIDER (BRAKE PLATE)	
159	3-359-456-01	SPRING(TRIGGER SPRING), TORSION	
160	X-3366-569-1	ARM ASSY, FR	
161	3-359-453-01	SPRING (FR ARM), TORSION	
162	3-359-419-11	GEAR (FR GEAR)	
163	3-359-421-11	CLUTCH (REEL DISK)	
164	3-359-418-11	PULLEY (FR PULLEY)	
165	X-3359-415-1	CHASSIS ASSY, MECHANICAL	
166	3-359-469-01	SPACER	

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
*	1-651-844-11	CONNECTOR BOARD			
		***************			
		< CAPACITOR >			
C531	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
* CN403	1-569-505-11	PIN, CONNECTOR 10P			
CNJ401	1-569-624-21	SOCKET, CONNECTOR 17P (SYSTEM CONTROL)			
* CNJ402	1-565-561-11	PIN, CONNECTOR 3P (AU BUS)			
		< RESISTOR >			
R525	1-216-001-00	METAL CHIP	10	5%	1/10W
**					
*	A-2007-213-A	MAIN BOARD, COMPLETE			
		********************			
		< CAPACITOR >			
C102	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C103	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C104	1-106-351-00	MYLAR	2200PF	5%	200V
C105	1-106-351-00	MYLAR	2200PF	5%	200V
C106	1-124-257-00	ELECT	2.2uF	20%	50V
C107	1-136-174-00	FILM	0.56uF	5%	50V
C108	1-136-171-00	FILM	0.33uF	5%	50V
C109	1-124-927-11	ELECT	4.7uF	20%	100V
C110	1-124-925-11	ELECT	2.2uF	20%	100V
C114	1-124-261-00	ELECT	10uF	20%	50V
C115	1-124-584-00	ELECT	100uF	20%	10V
C116	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C117	1-124-925-11	ELECT	2.2uF	20%	100V
C119	1-124-902-00	ELECT	0.47uF	20%	50V
C120	1-124-927-11	ELECT	4.7uF	20%	100V
C130	1-124-925-11	ELECT	2.2uF	20%	100V
C131	1-164-346-11	CERAMIC CHIP	1uF		16V
C132	1-164-346-11	CERAMIC CHIP	1uF		16V
C202	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C203	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C204	1-106-351-00	MYLAR	2200PF	5%	200V
C205	1-106-351-00	MYLAR	2200PF	5%	200V
C206	1-124-257-00	ELECT	2.2uF	20%	50V
C207	1-136-174-00	FILM	0.56uF	5%	50V
C208	1-136-171-00	FILM	0.33uF	5%	50V
C209	1-124-927-11	ELECT	4.7uF	20%	100V
C210	1-124-925-11	ELECT	2.2uF	20%	100V
C214	1-124-261-00	ELECT	10uF	20%	50V
C215	1-124-584-00	ELECT	100uF	20%	10V
C216	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C217	1-124-925-11	ELECT	2.2uF	20%	100V
C219	1-124-902-00	ELECT	0.47uF	20%	50V
C220	1-124-927-11	ELECT	4.7uF	20%	100V
C230	1-124-925-11	ELECT	2.2uF	20%	100V
C231	1-164-346-11	CERAMIC CHIP	1uF		16V
C232	1-164-346-11	CERAMIC CHIP	1uF		16V
C601	1-124-443-00	ELECT	100uF	20%	10V
C602	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C604	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C605	1-124-902-00	ELECT	0.47uF	20%	50V
C606	1-126-103-11	ELECT	470uF	20%	16V
C607	1-126-103-11	ELECT	470uF	20%	16V
C608	1-126-103-11	ELECT	470uF	20%	16V
C609	1-124-902-00	ELECT	0.47uF	20%	50V
C610	1-124-472-11	ELECT	470uF	20%	10V
C611	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C612	1-124-472-11	ELECT	470uF	20%	10V
C613	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C614	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C615	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C616	1-124-907-11	ELECT	10uF	20%	50V
C617	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C618	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C620	1-124-907-11	ELECT	10uF	20%	50V
C621	1-124-907-11	ELECT	10uF	20%	50V
C630	1-124-927-11	ELECT	4.7uF	20%	100V
C631	1-126-160-11	ELECT	1uF	20%	50V
C636	1-124-916-11	ELECT	22uF	20%	63V
C641	1-124-927-11	ELECT	4.7uF	20%	100V
C642	1-124-902-00	ELECT	0.47uF	20%	50V
C645	1-124-907-11	ELECT	10uF	20%	50V
C646	1-124-925-11	ELECT	2.2uF	20%	100V
C647	1-124-443-00	ELECT	100uF	20%	10V
C648	1-124-443-00	ELECT	100uF	20%	10V
C649	1-124-907-11	ELECT	10uF	20%	50V

Ref.No.	Part No.	Description	Remark
C650	1-124-916-11	ELECT 22uF 20% 63V	
C6035	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN601	1-750-585-11	CONNECTOR, FFC/FPC 7P	
CN602	1-580-783-11	CONNECTOR, BOARD TO BOARD 10P	
CN603	1-750-585-11	CONNECTOR, FFC/FPC 7P	
CN604	1-580-783-11	CONNECTOR, BOARD TO BOARD 10P	
CN605	1-580-783-11	CONNECTOR, BOARD TO BOARD 10P	
* CN606	1-580-415-11	SOCKET, CONNECTOR 11P	
* CN607	1-568-862-11	SOCKET, CONNECTOR 19P	

< DIODE >

Ref.No.	Part No.	Description	Remark
D602	8-719-422-91	DIODE MA8091	
D603	8-719-016-74	DIODE 1SS352	
D604	8-719-016-74	DIODE 1SS352	
D605	8-719-200-02	DIODE 10E2	
D606	8-719-200-02	DIODE 10E2	
D607	8-719-016-74	DIODE 1SS352	
D608	8-719-016-74	DIODE 1SS352	
D620	8-719-016-84	DIODE 02DZ2.0	

< IC >

Ref.No.	Part No.	Description	Remark
IC101	8-752-058-57	IC CXA1599Q	
IC102	8-759-998-71	IC BA3308F	
IC103	8-752-037-90	IC CXA1331M	
IC104	8-759-516-47	IC CD4066BCM	
IC601	8-759-259-60	IC uPD78052-020	
IC602	8-759-165-82	IC PST600E-T	
IC603	8-759-266-35	IC TA8242AK	
IC6004	8-759-009-06	IC MC14052BF	

< COIL >

Ref.No.	Part No.	Description	Remark
L601	1-408-421-00	INDUCTOR 100uH	
L6002	1-410-470-11	INDUCTOR 10uH	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q101	8-729-602-21	TRANSISTOR 2SC4154-F	
Q201	8-729-602-21	TRANSISTOR 2SC4154-F	
Q601	8-729-901-06	TRANSISTOR DTA144EK	
Q602	8-729-901-06	TRANSISTOR DTA144EK	
Q603	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q604	8-729-140-75	TRANSISTOR 2SD999-CLCK	
Q605	8-729-805-41	TRANSISTOR 2SC3398	
Q606	8-729-602-36	TRANSISTOR 2SA1602-F	
Q607	8-729-805-45	TRANSISTOR 2SC3395	
Q608	8-729-805-45	TRANSISTOR 2SC3395	
Q609	8-729-805-45	TRANSISTOR 2SC3395	
Q610	8-729-805-65	TRANSISTOR 2SA1344	
Q611	8-729-602-21	TRANSISTOR 2SC4154-F	
Q612	8-729-602-36	TRANSISTOR 2SA1602-F	
Q613	8-729-901-06	TRANSISTOR DTA144EK	
Q614	8-729-805-45	TRANSISTOR 2SC3395	
Q615	8-729-901-06	TRANSISTOR DTA144EK	
Q616	8-729-901-06	TRANSISTOR DTA144EK	
Q617	8-729-901-06	TRANSISTOR DTA144EK	
Q627	8-729-805-45	TRANSISTOR 2SC3395	
Q630	8-729-805-65	TRANSISTOR 2SA1344	
Q680	8-729-805-41	TRANSISTOR 2SC3398	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R106	1-216-050-00	METAL GLAZE 1.1K 5% 1/10W	
R107	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R108	1-216-043-00	METAL CHIP 560 5% 1/10W	
R109	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R110	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R111	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R112	1-216-054-00	METAL GLAZE 1.6K 5% 1/10W	
R113	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R114	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R115	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R116	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R117	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R118	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R119	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R120	1-216-025-00	METAL CHIP 100 5% 1/10W	
R121	1-216-025-00	METAL CHIP 100 5% 1/10W	
R128	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R206	1-216-050-00	METAL GLAZE 1.1K 5% 1/10W	
R207	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R208	1-216-043-00	METAL CHIP 560 5% 1/10W	
R209	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R210	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R211	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R212	1-216-054-00	METAL GLAZE 1.6K 5% 1/10W	
R213	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R214	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R215	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R216	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R217	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R218	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R219	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R220	1-216-025-00	METAL CHIP 100 5% 1/10W	
R221	1-216-025-00	METAL CHIP 100 5% 1/10W	
R228	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R504	1-216-025-00	METAL CHIP 100 5% 1/10W	
R505	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R601	1-216-025-00	METAL CHIP 100 5% 1/10W	
R602	1-216-025-00	METAL CHIP 100 5% 1/10W	
R603	1-216-025-00	METAL CHIP 100 5% 1/10W	

MAIN MD-A

Ref. No.	Part No.	Description	Remark
R604	1-216-025-00	METAL CHIP 100 5% 1/10W	
R605	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R606	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R607	1-216-025-00	METAL CHIP 100 5% 1/10W	
R612	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R614	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R615	1-216-025-00	METAL CHIP 100 5% 1/10W	
R616	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R619	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R620	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R621	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R622	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R623	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R624	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R625	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R626	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R627	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R628	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R629	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R630	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R631	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R632	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R633	1-216-025-00	METAL CHIP 100 5% 1/10W	
R634	1-216-025-00	METAL CHIP 100 5% 1/10W	
R635	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R636	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R637	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R638	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R639	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R640	1-216-295-00	METAL CHIP 0 5% 1/10W	
R641	1-216-295-00	METAL CHIP 0 5% 1/10W	
R642	1-216-295-00	METAL CHIP 0 5% 1/10W	
R643	1-216-025-00	METAL CHIP 100 5% 1/10W	
R644	1-216-025-00	METAL CHIP 100 5% 1/10W	
R645	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R646	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R647	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R648	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R649	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R650	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R651	1-216-025-00	METAL CHIP 100 5% 1/10W	
R652	1-216-025-00	METAL CHIP 100 5% 1/10W	
R653	1-216-025-00	METAL CHIP 100 5% 1/10W	
R654	1-216-025-00	METAL CHIP 100 5% 1/10W	
R655	1-216-025-00	METAL CHIP 100 5% 1/10W	
R656	1-216-001-00	METAL CHIP 10 5% 1/10W	
R660	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R661	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R670	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R671	1-216-081-00	METAL CHIP 22K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R672	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R673	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R674	1-216-078-00	METAL GLAZE 16K 5% 1/10W	
R675	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R676	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R677	1-216-025-00	METAL CHIP 100 5% 1/10W	
R678	1-216-025-00	METAL CHIP 100 5% 1/10W	
R679	1-216-025-00	METAL CHIP 100 5% 1/10W	
R681	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R682	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R683	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R684	1-216-041-00	METAL CHIP 470 5% 1/10W	
R685	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R686	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R687	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R689	1-216-090-00	METAL CHIP 51K 5% 1/10W	
R690	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R691	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R692	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R693	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R694	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R695	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R696	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R697	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R700	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R701	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R702	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R6070	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R6071	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV101	1-241-785-11	RES, ADJ, CARBON 10K	
RV201	1-241-785-11	RES, ADJ, CARBON 10K	
		< CONNECTOR >	
* TP601	1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P	
		< VIBRATOR >	
X601	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-2006-623-A	MD-A BOARD, COMPLETE ********************	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C12	1-136-157-00	FILM 0.022uF 5% 50V	
C13	1-124-234-00	ELECT 22uF 20% 16V	
C18	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	

Ref. No.	Part No.	Description	Remark
C21	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C22	1-136-157-00	FILM 0.022uF 5% 50V	
C23	1-124-234-00	ELECT 22uF 20% 16V	
C28	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C31	1-124-234-00	ELECT 22uF 20% 16V	
C32	1-124-234-00	ELECT 22uF 20% 16V	
C72	1-124-499-11	ELECT, NONPOLAR 1uF 20% 50V	
		< CONNECTOR >	
* CNJ31	1-580-782-11	CONNECTOR, BOARD TO BOARD 10P	
* CNJ72	1-580-411-11	SOCKET, CONNECTOR 4P	
* CNP32	1-580-772-11	PIN, CONNECTOR (PC BOARD) 4P	
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	
		< IC >	
IC31A	8-759-106-02	IC UPC4570G2	
		< JUMPER RESISTOR >	
JW1	1-216-295-00	METAL CHIP 0 5% 1/10W	
JW51	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JW52	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JW53	1-216-296-91	METAL GLAZE 0 5% 1/8W	
JW54	1-216-296-91	METAL GLAZE 0 5% 1/8W	
		< TRANSISTOR >	
Q71A	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R11	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R12	1-216-025-00	METAL CHIP 100 5% 1/10W	
R13	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R14	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R21	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R22	1-216-025-00	METAL CHIP 100 5% 1/10W	
R23	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R24	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R31	1-216-033-00	METAL CHIP 220 5% 1/10W	
R32	1-216-033-00	METAL CHIP 220 5% 1/10W	
R71	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R72	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R73	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R74	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV11A	1-241-761-11	RES, ADJ, CARBON 1K	
RV21A	1-241-761-11	RES, ADJ, CARBON 1K	
RV71A	1-241-630-11	RES, ADJ, CARBON 10K	
RV72A	1-241-630-11	RES, ADJ, CARBON 10K	

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Ref. No.	Part No.	Description	Remark
*	A-2007-040-A	MD-B BOARD, COMPLETE ********************	
		< CAPACITOR >	
C11	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C12	1-136-157-00	FILM 0.022uF 5% 50V	
C13	1-124-234-00	ELECT 22uF 20% 16V	
C18	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C21	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C22	1-136-157-00	FILM 0.022uF 5% 50V	
C23	1-124-234-00	ELECT 22uF 20% 16V	
C28	1-163-117-00	CERAMIC CHIP 100PF 5% 50V	
C31	1-124-234-00	ELECT 22uF 20% 16V	
C32	1-124-234-00	ELECT 22uF 20% 16V	
C33	1-124-234-00	ELECT 22uF 20% 16V	
C51	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C52	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C53	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C54	1-136-601-11	FILM 0.01uF 5% 630V	
C56	1-164-505-11	CERAMIC CHIP 2.2uF 16V	
C57	1-164-346-11	CERAMIC CHIP 1uF 16V	
C71	1-164-346-11	CERAMIC CHIP 1uF 16V	
C80	1-124-234-00	ELECT 22uF 20% 16V	
C81	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C82	1-136-157-00	FILM 0.022uF 5% 50V	
C83	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C84	1-136-478-11	FILM 470PF 5% 630V	
C85	1-136-433-11	FILM 100PF 5% 630V	
C86	1-163-143-00	CERAMIC CHIP 0.0012uF 5% 50V	
C87	1-136-273-91	FILM 75PF 5% 630V	
C88	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C89	1-124-234-00	ELECT 22uF 20% 16V	
C90	1-107-584-11	CERAMIC 4PF 0.25PF 500V	
C91	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C92	1-136-157-00	FILM 0.022uF 5% 50V	
C93	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C94	1-136-478-11	FILM 470PF 5% 630V	
C95	1-136-433-11	FILM 100PF 5% 630V	
C96	1-163-143-00	CERAMIC CHIP 0.0012uF 5% 50V	
C97	1-136-273-91	FILM 75PF 5% 630V	
C98	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C99	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
		< CONNECTOR >	
* CNP31	1-580-782-11	CONNECTOR, BOARD TO BOARD 10P	
* CNP32	1-580-781-11	PIN, CONNECTOR (PC BOARD) 7P	
* CNP33	1-580-782-11	CONNECTOR, BOARD TO BOARD 10P	
* CNP71	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P	
* CNP72	1-580-411-11	SOCKET, CONNECTOR 4P	

MD-B PANEL

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D31	8-719-404-46	DIODE MA110	
		< IC >	
IC31B	8-759-106-02	IC UPC4570G2	
IC81C	8-759-106-56	IC UPC1297CA	
		< COIL >	
L81	1-410-780-11	INDUCTOR 27mH	
L91	1-410-780-11	INDUCTOR 27mH	
		< TRANSISTOR >	
Q51	8-729-808-01	TRANSISTOR 2SD1622-S	
Q52	8-729-808-01	TRANSISTOR 2SD1622-S	
Q53	8-729-808-01	TRANSISTOR 2SD1622-S	
Q71B	8-729-216-22	TRANSISTOR 2SA1162-G	
		< RESISTOR >	
R11	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R12	1-216-025-00	METAL CHIP 100 5% 1/10W	
R13	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R14	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R21	1-216-099-00	METAL CHIP 120K 5% 1/10W	
R22	1-216-025-00	METAL CHIP 100 5% 1/10W	
R23	1-216-100-00	METAL GLAZE 130K 5% 1/10W	
R24	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R31	1-216-033-00	METAL CHIP 220 5% 1/10W	
R32	1-216-033-00	METAL CHIP 220 5% 1/10W	
R51	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R52	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R53	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R54	1-216-309-00	METAL CHIP 5.6 5% 1/10W	
R55	1-216-309-00	METAL CHIP 5.6 5% 1/10W	
R57	1-216-298-00	METAL CHIP 2.2 5% 1/10W	
R71	1-216-082-00	METAL GLAZE 24K 5% 1/10W	
R72	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R73	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R74	1-216-089-91	METAL GLAZE 47K 5% 1/10W	
R81	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R82	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R83	1-216-001-00	METAL CHIP 10 5% 1/10W	
R84	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R85	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R91	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R92	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R93	1-216-001-00	METAL CHIP 10 5% 1/10W	
R94	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R95	1-216-075-00	METAL CHIP 12K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV11B	1-241-761-11	RES, ADJ, CARBON 1K	
RV21B	1-241-761-11	RES, ADJ, CARBON 1K	
RV71B	1-241-630-11	RES, ADJ, CARBON 10K	
RV72B	1-241-630-11	RES, ADJ, CARBON 10K	
RV81	1-241-786-11	RES, ADJ, CARBON 22K	
RV91	1-241-786-11	RES, ADJ, CARBON 22K	
		< RELAY >	
RY31	1-515-913-11	RELAY	
		< TRANSFORMER >	
T51	1-406-417-11	COIL, BIAS OSCILLATION	
T81	1-433-381-11	TRANSFORMER, BIAS OSCILLATOR	
T91	1-433-381-11	TRANSFORMER, BIAS OSCILLATOR	
		< CONNECTOR >	
* TP81	1-568-449-11	HOUSING, CONNECTOR (PC BOARD) 3P	
***			
*	A-2007-214-A	PANEL BOARD, COMPLETE ********************	
*	3-905-909-01	HOLDER (FL)	
*	4-932-810-11	CUSHION (FL)	
		< CAPACITOR >	
C301	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C302	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C303	1-164-346-11	CERAMIC CHIP 1uF 16V	
C304	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C305	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C307	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C308	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
C309	1-163-003-11	CERAMIC CHIP 330PF 10% 50V	
		< CONNECTOR >	
CN301	1-580-472-11	SOCKET, CONNECTOR 5P	
CN302	1-580-472-11	SOCKET, CONNECTOR 5P	
* CN305	1-580-415-11	SOCKET, CONNECTOR 11P	
		< FLUORESCENT INDICATOR >	
FL301	1-517-232-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC301	8-759-198-92	IC M38122-M2-060FP	

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R301	1-216-025-00	METAL CHIP	100	5%	1/10W
R302	1-216-025-00	METAL CHIP	100	5%	1/10W
R303	1-216-025-00	METAL CHIP	100	5%	1/10W
R304	1-216-025-00	METAL CHIP	100	5%	1/10W
R305	1-216-025-00	METAL CHIP	100	5%	1/10W
R306	1-216-073-00	METAL CHIP	10K	5%	1/10W
R307	1-216-073-00	METAL CHIP	10K	5%	1/10W
R308	1-216-073-00	METAL CHIP	10K	5%	1/10W
R310	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R311	1-216-077-00	METAL CHIP	15K	5%	1/10W
R312	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R313	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R314	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R315	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R326	1-216-073-00	METAL CHIP	10K	5%	1/10W
R327	1-216-073-00	METAL CHIP	10K	5%	1/10W
R328	1-216-073-00	METAL CHIP	10K	5%	1/10W
R329	1-216-073-00	METAL CHIP	10K	5%	1/10W
R331	1-216-073-00	METAL CHIP	10K	5%	1/10W
R332	1-216-097-00	METAL CHIP	100K	5%	1/10W
R333	1-216-097-00	METAL CHIP	100K	5%	1/10W
R334	1-216-097-00	METAL CHIP	100K	5%	1/10W
R335	1-216-097-00	METAL CHIP	100K	5%	1/10W
R336	1-216-097-00	METAL CHIP	100K	5%	1/10W
R337	1-216-097-00	METAL CHIP	100K	5%	1/10W
		< SWITCH >			
S301	1-554-303-21	SWITCH, TACTILE (DOLBY NR)			
S302	1-554-303-21	SWITCH, TACTILE (DIRECTION MODE)			
S303	1-554-303-21	SWITCH, TACTILE (◉ MUTE)			
S304	1-554-303-21	SWITCH, TACTILE (DUBBING MODE)			
S305	1-554-303-21	SWITCH, TACTILE (CD SYNCHRO)			
S306	1-554-303-21	SWITCH, TACTILE (COUNTER A/B)			
S307	1-554-303-21	SWITCH, TACTILE (RESET)			
		< VIBRATOR >			
X301	1-577-358-21	VIBRATOR, CERAMIC (4MHz)			

****

*	A-2007-215-A	POWER BOARD, COMPLETE *********************			
	7-682-547-09	SCREW +BVTT	3X6	(S)	
		< CAPACITOR >			
C501	1-124-360-00	ELECT	1000uF	20%	16V
C502	1-124-360-00	ELECT	1000uF	20%	16V
C503	1-124-360-00	ELECT	1000uF	20%	16V
C504	1-124-360-00	ELECT	1000uF	20%	16V
C505	1-124-478-11	ELECT	100uF	20%	25V
C506	1-124-920-11	ELECT	330uF	20%	50V
C507	1-124-122-11	ELECT	100uF	20%	50V
C508	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C509	1-126-927-11	ELECT	2200uF	20%	6.3V
C510	1-124-477-11	ELECT	47uF	20%	25V
C513	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C514	1-124-927-11	ELECT	4.7uF	20%	100V
C515	1-124-472-11	ELECT	470uF	20%	10V
C516	1-124-472-11	ELECT	470uF	20%	10V
C517	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C518	1-126-926-11	ELECT	1000uF	20%	10V
C519	1-126-926-11	ELECT	1000uF	20%	10V
C520	1-126-101-11	ELECT	100uF	20%	16V
C521	1-126-101-11	ELECT	100uF	20%	16V
C526	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C527	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C529	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C530	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C590	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C595	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
* CN502	1-568-862-11	SOCKET, CONNECTOR 19P			
* CNP501	1-569-496-11	SOCKET, CONNECTOR 10P			
		< DIODE >			
D501	8-719-200-02	DIODE	10E2		
D502	8-719-200-02	DIODE	10E2		
D503	8-719-200-02	DIODE	10E2		
D504	8-719-200-02	DIODE	10E2		
D506	8-719-200-02	DIODE	10E2		
D507	8-719-200-02	DIODE	10E2		
D508	8-719-200-02	DIODE	10E2		
D509	8-719-200-02	DIODE	10E2		
D510	8-719-200-02	DIODE	10E2		
D511	8-719-200-02	DIODE	10E2		
D514	8-719-422-58	DIODE	MA8062		
D515	8-719-200-02	DIODE	10E2		
D516	8-719-200-02	DIODE	10E2		
D517	8-719-017-94	DIODE	MA8180		
D518	8-719-977-12	DIODE	DTZ6.8B		
D520	8-719-016-74	DIODE	1SS352		
D521	8-719-016-74	DIODE	1SS352		
		< HEAT SINK >			
* HT501	3-309-144-21	HEAT SINK			
* HT502	4-880-403-11	HEAT SINK			
* HT503	3-309-144-21	HEAT SINK			
* HT506	3-309-144-21	HEAT SINK			

POWER | SW-A | SW-B | SW (A)

Ref. No.	Part No.	Description	Remark
* HT507	3-309-144-21	HEAT SINK	

< IC >

Ref. No.	Part No.	Description	Remark
IC501	8-759-602-66	IC M5230L-A	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠F501	1-532-840-21	LINK, IC (1.25A)	
⚠F502	1-532-840-21	LINK, IC (1.25A)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q501	8-729-209-15	TRANSISTOR 2SD2012	
Q502	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q503	8-729-209-15	TRANSISTOR 2SD2012	
Q504	8-729-602-21	TRANSISTOR 2SC4154-F	
Q505	8-729-118-01	TRANSISTOR 2SB1116-K	
Q506	8-729-141-83	TRANSISTOR 2SB1094-LK	
Q507	8-729-209-15	TRANSISTOR 2SD2012	
Q508	8-729-805-45	TRANSISTOR 2SC3395	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R506	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R507	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R510	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R511	1-216-033-00	METAL CHIP 220 5% 1/10W	
R512	1-216-043-00	METAL CHIP 560 5% 1/10W	
R513	1-216-033-00	METAL CHIP 220 5% 1/10W	
R514	1-216-043-00	METAL CHIP 560 5% 1/10W	
R515	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R516	1-216-074-00	METAL CHIP 11K 5% 1/10W	
R517	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R518	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R519	1-216-025-00	METAL CHIP 100 5% 1/10W	
R520	1-216-025-00	METAL CHIP 100 5% 1/10W	
R522	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R528	1-216-041-00	METAL CHIP 470 5% 1/10W	
R529	1-216-041-00	METAL CHIP 470 5% 1/10W	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
⚠T501	1-423-812-11	TRANSFORMER, POWER	

`**************************************************************`

Ref. No.	Part No.	Description	Remark
*	1-638-020-11	SW-A BOARD **********	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	

< IC >

Ref. No.	Part No.	Description	Remark
IC81A	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R84	1-249-417-11	CARBON 1K 5% 1/4W F	
R85	1-249-408-11	CARBON 180 5% 1/4W F	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S81A	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82A	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S86A	1-571-281-21	SWITCH, LEAF (HALF DET)	

`**************************************************************`

Ref. No.	Part No.	Description	Remark
*	1-638-020-11	SW-B BOARD **********	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CNP81	1-568-850-11	SOCKET, CONNECTOR 7P	

< IC >

Ref. No.	Part No.	Description	Remark
IC81B	8-749-924-10	IC PHONT REFLECTOR NJL5165K-B(H1)	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R81	1-249-414-11	CARBON 560 5% 1/4W F	
R82	1-247-818-11	CARBON 300 5% 1/4W	
R83	1-247-834-11	CARBON 1.3K 5% 1/4W	
R84	1-249-417-11	CARBON 1K 5% 1/4W F	
R85	1-249-408-11	CARBON 180 5% 1/4W F	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S81B	1-571-958-11	SWITCH, PUSH (1 KEY)(STOP DET)	
S82B	1-571-281-21	SWITCH, LEAF (CrO2 DET)	
S83	1-571-281-21	SWITCH, LEAF (METAL DET)	
S84	1-571-281-21	SWITCH, LEAF (ERASE PROOF (SIDE A))	
S85	1-571-281-21	SWITCH, LEAF (ERASE PROOF (SIDE B))	
S86B	1-571-281-21	SWITCH, LEAF (HALF DET)	

`**************************************************************`

Ref. No.	Part No.	Description	Remark
*	1-651-845-11	SW (A) BOARD ************	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN304	1-580-412-11	SOCKET, CONNECTOR 5P	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R322	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R323	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R324	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R325	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
		< SWITCH >	
S315	1-554-303-21	SWITCH, TACTILE (□)	
S316	1-554-303-21	SWITCH, TACTILE (▷)	
S317	1-554-303-21	SWITCH, TACTILE (◁)	
S318	1-554-303-21	SWITCH, TACTILE (◀◀)	
S319	1-554-303-21	SWITCH, TACTILE (▶▶)	

****

Ref. No.	Part No.	Description	Remark
*	1-651-846-11	SW (B) BOARD ************	
		< CONNECTOR >	
CN303	1-580-412-11	SOCKET, CONNECTOR 5P	
		< RESISTOR >	
R316	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R317	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R318	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R319	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R320	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R321	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
		< SWITCH >	
S308	1-554-303-21	SWITCH, TACTILE (□)	
S309	1-554-303-21	SWITCH, TACTILE (▷)	
S310	1-554-303-21	SWITCH, TACTILE (◁)	
S311	1-554-303-21	SWITCH, TACTILE (❚❚ PAUSE)	
S312	1-554-303-21	SWITCH, TACTILE (◀◀)	
S313	1-554-303-21	SWITCH, TACTILE (▶▶)	
S314	1-554-303-21	SWITCH, TACTILE (● REC)	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
5	1-765-405-11	WIRE (FLAT TYPE) (19 CORE)	
6	1-751-819-11	WIRE (FLAT TYPE) (5 CORE)	
15	1-765-404-11	WIRE (FLAT TYPE) (7 CORE)	
21	1-751-821-11	WIRE (FLAT TYPE) (11 CORE)	
FL301	1-517-232-11	INDICATOR TUBE, FLUORESCENT	
HP101	A-2003-757-A	BASE ASSY, HEAD (DECK A)	
HRPE101	A-2003-930-A	BASE ASSY, HEAD (DECK B)	
IC81A	8-749-924-10	PHOTO REFECTOR NJ5165K-B (DECK A)	
IC81B	8-749-924-10	PHOTO REFECTOR NJ5165K-B (DECK B)	
M101A	X-3363-501-2	MOTOR ASSY (REEL) (DECK A)	
M101B	X-3363-501-2	MOTOR ASSY (REEL) (DECK B)	
M102A	X-3365-377-1	MOTOR ASSY (CAPSTAN) (DECK A)	
M102B	X-3365-377-1	MOTOR ASSY (CAPSTAN) (DECK B)	

Ref. No.	Part No.	Description	Remark
⚠T501	1-423-812-11	TRANSFORMER, POWER	

****

****

HARDWARE LIST

****

Ref. No.	Part No.	Description	Remark
#1	7-621-770-67	SCREW +PTT 2.6X6 (S)	
#2	7-621-773-93	SCREW (PANEL 2.6 TP2)	
#3	7-621-775-00	SCREW +B 2.6X3	
#4	7-621-849-00	SCREW, TAPPING	
#5	7-627-556-08	SCREW +P 2.6X2.8	
#6	7-682-547-09	SCREW +BVTT 3X6 (S)	
#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#8	7-685-780-01	SCREW +PTT1 2X3 (S)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Sony Corporation
Consumer A&V Products Company
Home A&V Division

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SS-H4900

SERVICE MANUAL

E Model
Australian Model

- **SS-H4900 is the speaker system in MHC-E80X .**

Photo : Left channel speaker

SPECIFICATIONS

System	3-way bass reflex
Speaker units	
Woofer:	14 cm dia., cone type
Tweeter:	2.5 cm dia., soft dome type
Super-Tweeter:	2 cm dia., dome type
Rated impedance	6 ohms
Dimensions	Approx. 210 x 390 x 255 mm (8 3/8 x 15 3/8 x 10 1/8 inches)
Mass	Approx. 5.5 kg (12 lb 3 oz)

Design and specifications subject to change without notice.

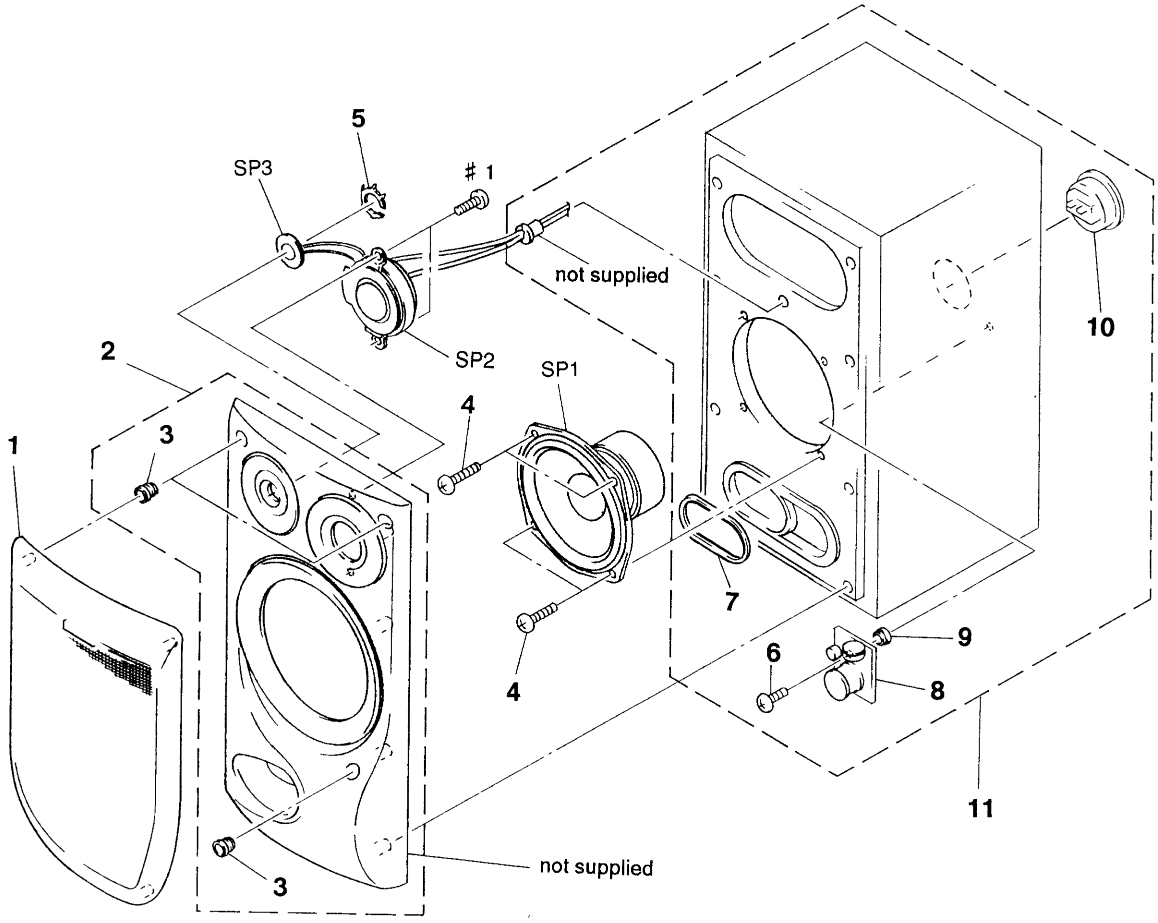
SPEAKER SYSTEM

SONY®

EXPLODED VIEW

NOTE:
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The mechanical parts with no reference number in the exploded views are not supplied.

— Left channel —



Ref. No.	Part No.	Description	Remark
1	X-4944-419-1	FRAME (L) ASSY, GRILLE	
1	X-4944-420-1	FRAME (R) ASSY, GRILLE	
2	X-4944-417-1	PANEL (L) ASSY, FRONT	
2	X-4944-418-1	PANEL (R) ASSY, FRONT	
3	4-951-733-01	CATCHER	
4	4-874-614-21	SCREW (4)(3.5X14), TAPPING	
5	4-962-009-01	RING, RETAINING	
6	4-874-614-61	SCREW (4)(3.5X16), TAPPING	
7	4-967-589-01	PACKING	
* 8	1-589-587-11	NETWORK BOARD, COMPLETE	
9	4-966-947-01	COLLAR	
10	1-537-332-11	TERMINAL BOARD	
* 11	A-4353-646-B	CABINET (L) ASSY, SPEAKER	
* 11	A-4353-647-B	CABINET (R) ASSY, SPEAKER	
SP1	1-504-622-11	SPEAKER (WOOFER)(14CM)	

Ref. No.	Part No.	Description	Remark
SP2	1-504-430-11	SPEAKER (TWEETER)(2.5CM)	
SP3	1-504-435-11	SPEAKER (SUPER-TWEETER)(2CM)	

****

ACCESSORIES AND PACKING MATERIALS
****

4-965-118-01 CUSHION (four pieces in one package)

****

****
HARDWARE LIST
****

#1	7-685-661-79	SCREW +P 4X12 TYPE2 NON-SLIT

Sony Corporation
Consumer A&V Products Company
Home A&V Division

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